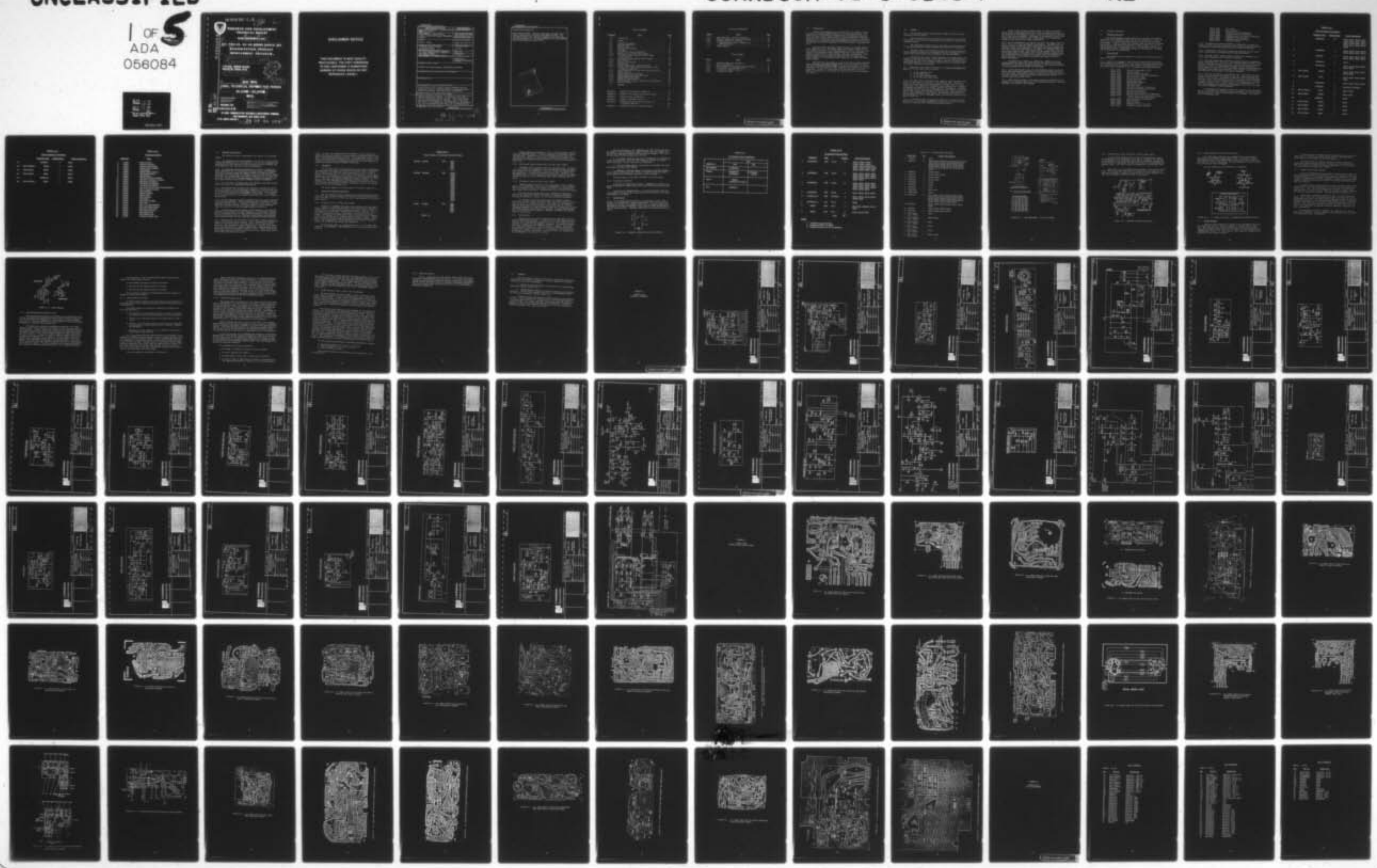
AD-A056 084   E-SYSTEMS INC   HUNTINGTON IN MEMCOR DIV   F/G 17/2.1
AN/VRC-12, 43-49 SERIES RADIO SET SILICONIZATION PRODUCT IMPROV--ETC(U)
MAY 78   K P YELTON   DAAB07-76-C-0135

UNCLASSIFIED   CORADCOM-76-C-0135-F   NL

1 OF 5
ADA
056084



FOR FURTHER TRAN

(12)

RESEARCH AND DEVELOPMENT TECHNICAL REPORT

REPORT CORADCOM-76-C-0135-F

AD A056084

AN/VRC-12, 43-49 SERIES RADIO SET SILICONIZATION PRODUCT IMPROVEMENT PROGRAM.

DAAB07-76-C-0135

E-SYSTEMS, MEMCOR DIVISION
HUNTINGTON, INDIANA 46750

Kevin P. Melton

DDC
JUL 5 1978
F

379p.

MAY 1978

FINAL TECHNICAL REPORT FOR PERIOD
30 JUNE - 30 APRIL
1978

AD No.
DDC FILE COPY

PREPARED FOR
CORADCOM

US ARMY COMMUNICATION RESEARCH & DEVELOPMENT COMMAND
FORT MONMOUTH, NEW JERSEY 07703
ATTN: DRDCO-COM-RN-1

78 07 03 079

392038

DISCLAIMER NOTICE

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER CORADCOM-76-C-0135-F	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) FINAL TECHNICAL REPORT FOR THE AN/VRC-12 RADIO SET PRODUCT IMPROVEMENT PROGRAM		5. TYPE OF REPORT & PERIOD COVERED FINAL REPORT FOR JUNE 1976 TO APRIL 1978
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) KEVIN P. YELTON		8. CONTRACT OR GRANT NUMBER(s) DAAB07-76-C-0135 new
9. PERFORMING ORGANIZATION NAME AND ADDRESS E-SYSTEMS, Inc. MEMCOR DIVISION 41 EAST PARK DRIVE HUNTINGTON, INDIANA 46750		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS CLIN 0007
11. CONTROLLING OFFICE NAME AND ADDRESS COMMANDER U.S. ARMY COMMUNICATIONS RESEARCH AND DEVELOPMENT COMMAND FORT MONMOUTH, NEW JERSEY 07703		12. REPORT DATE APRIL 1978
		13. NUMBER OF PAGES 494
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

R-442, RT-246, RT-524, Silicon devices, germanium devices, integrated circuits, transistor reduction, redesigned modules, improved performance, high reliability, compatibility.

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Obsolete germanium devices in the AN/VRC-12 series radios were replaced with silicon devices. A significant reduction in types of transistors used was realized. Three vital modules were completely redesigned to eliminate areas of functional deficiency. Those modules are the A2000A Crystal Switch Assembly, the A5200A/A5300A Squelch System and the A9000A/A9400B

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

78 07 03 079

392 038

(Continued from Block 20)

Power Supply Assembly. Improved performance and higher reliability resulted from the Product Improvement Program. The siliconized modules are completely compatible with the germanium modules except that the A5200A/A5300A and the A9000A/A9400B must be interchanged as single units.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LIST OF TABLES

1.0 INTRODUCTION

Germanium semiconductors, as utilized within the AN/VRC-12 series equipment are either presently obsolete or fast becoming obsolete. The great majority of semiconductor manufacturers have dropped germanium devices from their product lines in favor of silicon transistor technology. Because of that obvious shift away from germanium semiconductor technology, manufacturers of equipments utilizing germanium devices have been forced to pay premium prices with no assurance of a continued supply of germanium devices.

In June of 1976, E-Systems, Memcor Division, was awarded ECOM Contract DAAB07-76-C-0135. The primary intent and purpose of that contract was to upgrade the VRC-12 radio from germanium to silicon technology. The contract also designated certain modules which were to be redesigned to eliminate several areas of long standing, functional deficiencies. Those modules designated to be completely redesigned were the A2000 Crystal Switch Assembly, the A5200/A5300 Squelch System and the A9000/A9400 Power Supply Assembly.

The purpose of this report is to show the results of work performed under the Product Improvement Program (PIP) of Contract DAAB07-76-C-0135. This report discusses the replacement of germanium transistors with silicon transistors and the redesign of radio modules to incorporate those silicon transistors. Further, it cites some of the reasoning that led to the choice of transistors to be used and why particular circuit configurations were chosen.

2.0 SUMMARY

2.1 The Engineering effort under Contract DAAB07-76-C-0135 has been segregated into four phases.

The first phase involved the analysis and redesign of the twenty-nine modules of the VRC-12 to incorporate silicon devices in place of the germanium devices.

The second phase consisted of the fabrication of twenty-five sets of siliconized modules and their assembly into twenty-five, GFE radios.

The third phase of the program involved testing those twenty-five radios assembled in phase two in accordance with the requirements of the VRC-12 radio specifications, MIL-R-55099D(EL) and MIL-R-55100D(EL).

The fourth phase of the program emphasized the preparation and submission of ECP's for each module. Those ECP's were the formal method of formulating the VRC-12 data package in order to show how the VRC-12 series radios were updated to an all-silicon technology that is compatible with the present semiconductor technology.

2.2 Significant results were achieved via the Product Improvement Program (PIP) in four major areas of concern:

1. At the component level
2. At the module level
3. At the radio subsystem level
4. And at the radio system level.

2.2.1 The major result of the PIP at the component level has been the reduction in the number of transistor types which were used. Twenty-two types of germanium transistors were replaced with eight types of silicon transistors. That reduction of transistor types resulted from a coordinated engineering analysis of all module transistor requirements. Engineering analysis was the basis used to determine the most common types of transistors that could be used throughout the VRC-12 radio, while maintaining good circuit performance in each module. Established reliability parts were specified for several redesigned modules that had had a history of low module reliability.

2.2.2 At the module level, the greatest benefit of the Product Improvement Program was increased performance and reliability of various silicon modules in comparison with corresponding germanium modules.

In many cases, germanium modules tended to exhibit regeneration and/or shifts in operating characteristics over the temperature range - a characteristic of all germanium devices. Those deficiencies were detrimental to total radio performance. Replacement of the germanium devices with silicon devices has eliminated that extreme sensitivity to temperature changes and has eased circuit design requirements.

2.2.3 At the subsystem or tray level of the radio, the primary result of the PIP effort is an improved margin of performance. The A4000 tray is a specific example in which the module redesign has resulted in a major improvement in tray level performance. The A4000 tray, using germanium modules, had a history of instability and a tendency to oscillate, which affected other radio systems. That tendency is not present in the siliconized modules making up the A4000A tray. Benefits directly resulting from the siliconization of the A4000 tray are a more stable Intermediate Frequency Amplifier, a less distorted recovered audio signal and easier squelch adjustments.

The A3000A tray, A5000A tray, A6000A tray, A8000A tray and the A9000A/A9400B Power Supply all benefited from the conversion to silicon transistors by increased performance capability as well as results similar to those experienced by the A4000A tray subsystem.

2.2.4 At the radio system level, the most significant result is the improved radio performance attributable to the criteria already defined at the lower levels. The AN/VRC-12 series of radios was successfully siliconized and now display improved performance characteristics inherent to a thorough engineering design effort.

2.2.5 Other effort included in the Product Improvement Program were the submission of a technical report and the revising and updating of the mylar drawings in the AN/VRC-12 data package.

3.0 TECHNICAL DISCUSSION

3.1 Redesign Objectives

The primary purpose of this contract was to replace the germanium transistors in the AN/VRC-12 radios with silicon transistors. A total of seventy-two (72) germanium and early silicon devices are in the present data package. A total of twenty-two different types are used on the twenty-nine modules. These twenty-two types are listed in Table 3.1.1 and the modules involved are listed in Table 3.1.2. The secondary purpose was to upgrade the PIP units by completely redesigning three modules: the A2000, the A5200/5300 and the A9000/A9400A.

3.2 Scope of Work

The redesign work was completed according to the contract requirements as follows.

3.2.1 Analysis and redesign of the circuits of twenty-nine (29) modules (listed below) was undertaken to provide silicon transistor/integrated circuit replacements for all presently used germanium transistors and to provide silicon diode replacements for all presently used germanium diodes.

Module A200	Receiver Case Assembly (R442)
Module A400	RT Case Assembly
Module A1400	Mixer and Buffer Amplifier
Module A1500	Local Oscillator and Buffer Amplifiers
Module A1600	VHF Tuner Power Supply
Module A2000	Crystal Switch Assembly
Module A2100	Voltage Regulator
Module A3100	CRS Harmonic Generator
Module A3200	CRS Balanced Mixer
Module A3300	CRS Second Mixer
Module A3400	CRS First and Second IF Amplifier
Module A3500	CRS Third IF Amplifier and Limiter
Module A3600	CRS Hunt Discriminator
Module A3700	CRS Phase Discriminator
Module A4100	Receiver First and Second IF Amplifiers
Module A4200	Receiver Third, Fourth and Fifth IF Amplifiers, Limiter and Discriminator
Module A4300	Audio and Squelch Pre-Amplifier
Module A5100	Audio Amplifier
Module A5200	Receiver Squelch
Module A6300	Transmitter Master Oscillator
Module A6400	Transmitter Buffer Amplifier

Module A7000	Null Switch
Module A7200	Servo Amplifier
Module A8100	Transmitter 11.5 MHz Modulator
Module A8200	Transmitter Phase Discriminator
Module A8300	Transmitter First and Second IF Amplifier
Module A8400	Transmitter Hunt Generator
Module A8500	Transmitter Speech Amplifier
Module A9400	Transistor Adapter

3.2.2 The A2000 Crystal Switch Assembly was redesigned to replace the present contacts with newly configured, self-cleaning, wiping contacts and to replace the current seven-piece construction with two castings.

3.2.3 Deficiencies in the squelch system were evaluated and were eliminated by appropriately modifying the A5200 and A5300 modules.

3.2.4 The power supply, modules A9000 and A9400, was redesigned to decrease power dissipation and to increase reliability.

3.2.5 Prototype modules were fabricated, incorporating the improvements cited in paragraphs 3.2.1 thru 3.2.4 (in quantities needed to modify 5 each RT-246, 15 each RT-524, and 5 each R-442). Each new module was tested on government, electrical-interchangeability gages and the performance of sample inspections was tested on the government, mechanical-interchangeability gages (in accordance with paragraph 4.12 of Military Specifications MIL-R-55099(EL) and paragraph 4.13 of MIL-R-55100(EL)).

3.2.6 Five (5) each RT-246, 15 each RT-524, and 5 each RT-442 were modified by incorporating prototype modules into them. Those units were subjected to the following: performance of 100% electrical preconditioning (Burn-in), bounce preconditioning and Group A electrical tests, performance of Group B tests on four (4) sample units of each equipment type, and performance of Group C tests on two (2) samples of each equipment type. All tests were conducted in accordance with paragraphs 4.5.1, 4.5.2, 4.5.3 and 4.6 of MIL-R-55099(EL) and MIL-R-55100(EL).

Electromagnetic interference tests were conducted on one (1) RT-246 PIP unit. The tests were conducted per the requirements of MIL-R-55100D(EL) and per MIL-STD-461, Table A-1-MIL-E-55301 for CE equipment. The results were for information only.

TABLE 3.1.1

VRC-12 Present Ge Transistors

		Transistor Type	Quantity/Radio	Circuit Designations
1.		JAN2N499A	17	Q1401, Q2001, Q2002, Q3101, Q3201, Q3301, Q3401, Q3402, Q3501, Q3502, Q3601, Q3701, Q3702, Q8101, Q8102, Q8301, Q8302
2.		JAN2N328A	8	Q2101, Q2103, Q5101, Q5104, Q5202, Q5205, Q5207, Q8503,
3.		JAN2N335	8	Q2102, Q4301, Q5201, Q5206, Q8501, Q8504, Q8401, Q8403
4.		JAN2N335A	1	Q5102
5.		JAN2N1412A	6	Q9401, Q9402, Q9403, Q9404, Q9405, Q9406
6.	SM-C-374842	2N2208	6	Q4102, Q4202, Q4203, Q8201, Q4204, Q8202
7.	SM-D-413796	2N270	5	Q4302, Q4303, Q5103, Q5203, Q5204
8.		JAN2N502B	4	Q1502, Q1503, Q4101, Q4201
9.		JAN2N297A	2	Q201/Q402, Q202/Q403
10.	SM-C-374843-1	2N618	2	Q7201, Q7202
11.	SM-B-416325	2N2594	2	Q1601, Q1602
12.		JAN2N158	1	Q7205
13.	SM-B-416388	2N2199	1	Q6301
14.	SM-B-416430	2N2200	1	Q1501
15.	SM-C-374972	2N2213	1	Q8402
16.	SM-C-374839-1	2N542	1	Q7203

TABLE 3.1.1

VRC-12 Present Ge Transistors

		Transistor Type	Quantity/Radio	Circuit Designations
17.		JAN2N697	1	Q7001
18.	SM-C-374848-1	2N35/5	1	Q7204
19.	SM-B-416401	2N988	1	Q6401
20.	SM-B-416405	2N989	1	Q6402
21.		JAN2N1142	1	Q8103
22.	SM-C-374844-1	2N336	1	Q8502

TABLE 3.1.2

Siliconized Modules

	Module No.	Title
1.	A1400A	Receiver Mixer
2.	A1500A	Receiver Oscillator
3.	A1600A	Receiver Power Supply
4.	A2000A	Crystal Switch Assembly
5.	A2100A	Power Supply
6.	A3100A	CRS Harmonic Generator
7.	A3200A	CRS Balanced Mixer
8.	A3300A	CRS 2nd Mixer
9.	A3400A	CRS 1st and 2nd IF Amplifier
10.	A3500A	CRS 3rd IF Amplifier & Limiter
11.	A3600A	CRS Hunt Discriminator
12.	A3700A	CRS Phase Discriminator
13.	A4100A	1st and 2nd IF Amplifier
14.	A4200A	3rd, 4th and 5th IF Limiter & Discriminator
15.	A4300A	Audio & Squelch Preamp
16.	A5100A	Audio Amplifier
17.	A5200A	Squelch Amplifier
18.	A5300A	Squelch Filter
19.	A6300A	Xmtr Oscillator
20.	A6400A	Xmtr Buffer
21.	A7000A	Null Switch Assembly
22.	A7200A	Servo Amp
23.	A8100A	Xmtr 11.5 MHz Modulator
24.	A8200A	Xmtr Phase Discriminator
25.	A8300A	Xmtr 1st & 2nd IF Amp
26.	A8400A	Xmtr Hunt Generator
27.	A8500A	Xmtr Speech Amp
28.	A9000A	Power Supply Assy
29.	A9400B	Transistor Adapter Assy

3.3 Redesign Specification

The following technical requirements were applied to the hardware design.

3.3.1 The redesign required in paragraphs 3.2.1 thru 3.2.4 cited already, included breadboarding, test and evaluation to ensure that the modules were reproducible and that they would perform reliably per MIL-R-55099(EL) and MIL-R-55100(EL), when installed in end-item equipments.

3.3.2 All redesigned modules were marked with a letter "A" behind the module designation and were mechanically and electrically interchangeable with current modules, except that Modules A9000A and A9400B are interchangeable with Modules A9000 and A9400A as a pair only and modules A5200A and A5300A are interchangeable with Modules A5200 and A5300 as a pair only. Radio Sets equipped with redesigned modules performed in accordance with the present specifications of MIL-R-55099D(EL) and MIL-R-55100D(EL).

3.3.3 All transistors, purchased parts and components used must be available from at least two independent manufacturers.

3.3.4 Microcircuits may be used by the contractor providing the cost of the microcircuit(s), plus any additional components, is less than the cost of the same functional circuit implemented using discrete parts, including the cost of labor involved in the assembly of each design. All microcircuits used were selected in accordance with MIL-STD-1562, List of Standard Microcircuits.

3.3.5 Silicon transistor types were selected from types readily available to industry and Government. Direct replacement with no attendant circuit change was desirable, but, if necessary for reasons of lower cost, a change from PNP to NPN was permitted. The total number of silicon transistor types used was much less than the number presently being used.

3.3.6 To ensure that nuclear hardness of the equipment is not adversely affected by the germanium to silicon conversion, the Government furnished data on performance before and after radiation exposure on those transistors that were planned for use. Whenever circuit redesign was performed, those transistors were used that were least degraded by nuclear exposure.

3.3.7 During the PIP for the AN/VRC-12 Series Radios, Memcor Engineering pursued the following course of action. First, whenever minor changes occurred in a module concerning components, Memcor Engineering specified parts that were comparable to those already in use. Second, in the event of full-up redesign efforts (A2000A, A5200A/A5300A, A9000A/A9400B), Memcor Engineering specified established-reliability parts. Third, whenever possible, Memcor specified tantalum capacitors that have already been converted to established reliability status.

3.3.8 To ensure the compatibility of the AN/VRC-12 Series Radios with Digital Data Systems, Radio Sets incorporating the redesigned modules shall meet the following signal sense criteria: In the High Band (53.00 to 75.95 MHz), a positive going input signal to the transmitter shall produce a deviation of the RF carrier towards higher frequencies and there shall be no signal sense inversion over an AN/VRC-12 Radio Link.

3.4 GFE Radios

In late March, 1977, E-System Engineering had completed redesigning the twenty-nine (29) modules and testing at the module level. The Government furnished twenty-five (25) radios consisting of five (5) RT-246's, fifteen (15) RT-524's and five (5) R-442's for modification. At the end of August, 1977, the modification of the radios with silicon prototype modules and the radio level testing were deemed satisfactory in Memcor's own evaluation. The radios were ready for Government acceptance testing. On September 12, 1977, ECOM/TECOM personnel started radio testing (A, B and C Test) at Memcor production facilities in Huntington, Indiana. Testing was finished at the end of December, 1977.

The serial numbers of the above radios are listed in Table 3.4.1.

3.5 Selection of Silicon Transistors

The new, proposed, silicon transistors were sampled and their characteristics were carefully analyzed in accordance with the desired application. (See Tables 3.5.1, 3.5.2 and 3.5.3 for a total summary of the silicon devices used.)

3.5.1 RF Devices (over 11.5 MHz, Small Signal)

JAN2N918 and JAN2N3866 (NPN Types) were candidates for this application. However, an early investigation of the A1500 and A6300 VFO modules revealed that to convert the input voltage biasing from "PNP" to "NPN" could become very complicated. Problems with tracking, stability, oscillator noise, spectrum spurs, etc., would have to be considered with new boards. Specifically, the 2N918 device shows a very high level of harmonic activity over 400 MHz due to a high f_T rating (typically 1.0 GHz). Therefore, a potential problem exists concerning spurs and/or parasitic oscillations in the RF application. While searching the RF devices of the PNP variety, the JAN2N3251A was selected for examination.

The JAN2N3251A device is an improved version of a most common PNP transistor, the JAN2N2907A. The JAN2N3251A has a lower C_{ob} rating and more linearity.

TABLE 3.4.1

Serial Numbers of Government Furnished Radios

RT-246	(5 each)	S/N	1600
			1602
			1603
			1604
			1605
RT-524	(15 each)	S/N	18782
			18783
			18784
			18785
			18786
			18787
			18788
			18789
			18790
			18791
			18792
			18793
			18794
			18795
			19087
R-442	(5 each)	S/N	3829
			3836
			3838
			3839
			3862
	Total (25)		

Memcor Engineering designed ten (10) of the high frequency modules using the JAN2N3251A device. A total of eighteen (18) JAN2N3251A transistors were used. (See Table 3.5.2.) For some applications, where low capacitance was required, a controlled C_{ob} rating was recommended. These applications are identified with an asterisk at the device's designation in Table 3.5.2.

3.5.2 PNP General Purpose Devices (DC to 5.6 MHz, Small Signal)

JAN2N2907A device has been chosen for this application. IF Amplifiers ($\leq$ 5.65 MHz) on the A3000 tray and audio amplifiers using PNP devices were designed with the JAN2N2907A. A total of fifteen (15) applications was incorporated. The device performance is excellent. Similarly, the JAN2N2905A device in a TO-39 package (a higher power version of the 2N2907A device) was used in four (4) places where more power dissipation was expected.

3.5.3 NPN General Purpose Devices (Small Signal)

JAN2N2222A device was used for this application. This is complementary to the JAN2N2907A. The price of the JAN2N2222A is most attractive and it is believed to be the most popular transistor in the industry for small signal, NPN applications. The device was used in sixteen (16) places.

The four (4) devices mentioned above (JAN2N3251A, JAN2N2907A, JAN2905A and JAN2N2222A) replace fifty-three (53) germanium transistors. That was approximately 74 percent of the total germanium requirement.

For the NPN, medium power application, the present Si device, SM-B-416325 (2N2594), used on the A1600 (Tuner Power Supply Module) was replaced by an EIA type 2N5681 transistor. The reason for this change is that the 2N2594 device has a relatively high failure rate in the field. ECOM has recommended the 2N5681 transistor, which has a higher BV_{ceo} rating. The 2N5681 transistor also replaced the JAN2N697, an early silicon device, used on the A7000 Null Switch module. Therefore, the 2N5681 was used for three (3) applications.

3.5.4 Power Devices

Some difficulty occurred in finding the best replacement for the JAN2N297A germanium transistor. A study of silicon, PNP, power transistors indicated that a JAN-approved, silicon device (in a TO-3 package) was not available to compare with the JAN2N297A transistor. The nearest approximation among JAN devices is the 2N3792A transistor. However, an EIA type, power transistor (2N5868) was found to be the best possible replacement. An additional feature is the nearly 5:1 differential in price between the 2N5868 and the 2N3792A transistors. For those reasons, the 2N5868 device was recommended for use in four (4) places.

For the replacement of the JAN2N1412A (Ge, PNP, TO-36) Power Device, the JAN2N3792 chip (assembled in a JEDEC TO-203AA press-fit package) was selected for usage on the A9400B transistor Adapter Assembly. The reasons for choosing a TO-203AA package are as follows:

1. The current germanium transistors (JAN2N1412A) are assembled in a JEDEC TO-36 package. Since the TO-3 package is standard for silicon power transistors, a direct replacement is impossible.

2. The TO-3 package does not lend itself to the rubber boot technique used to prevent water leakage.

3. Therefore, E-Systems, Memcor has designed a heatsink casting to fit the JEDEC TO-203AA press-fit devices. The new heatsink has significantly improved heat dissipation and permits easier assembly.

The total usage of the 2N3792 (TO-203AA) is six (6) places.

3.5.5 Unijunction Transistor

A MIL-STD-701 Unijunction Transistor, JAN2N4948, was chosen to replace the SM-D-374972 (SU106) device used on the A8400 Xmtr Hunt generator module.

Concerning the JAN2N4948 device, the minimum intrinsic stand-off ratio needed to be restricted in value from 0.55 to 0.66 due to the output requirements of the module.

3.6 Microcircuits

3.6.1 On the A3200A CRS Balanced Mixer, an integrated circuit, Type CA3018A, was incorporated to improve performance. This IC is being used presently on the PRC-77 A44A Balanced Mixer and is producing significant improvements in module performance. Also, this new design eliminated the need for matched diodes. (Reference M38510/108 for applicable specifications.)

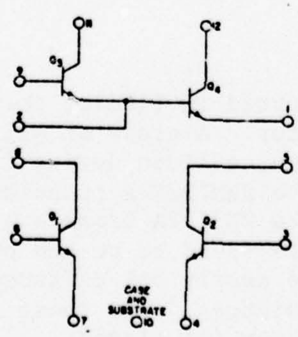


FIGURE 3.6.1. SCHEMATIC DIAGRAM FOR CA3018 AND CA3018A

TABLE 3.5.1

Si Transistor Type & Application

Application	Type: PNP	Type: NPN
RF Amplifier	JAN2N3251A	
General	JAN2N2907A JAN2N2905A	JAN2N2222A 2N5861
Power	2N5868 JAN2N3792 (TO-203AA)	
UJT	JAN2N4948	

TABLE 3.5.2

Si Transistor Type and Usage

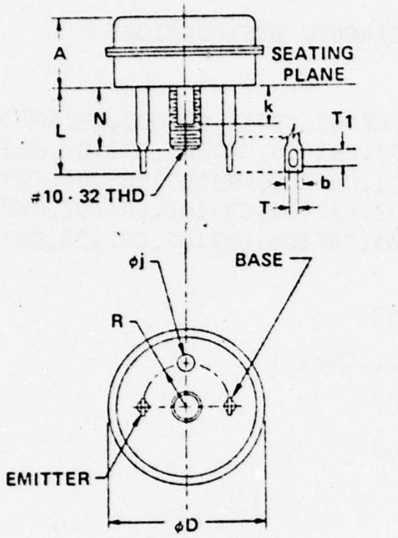
	Transistor	Type		Quantity	Circuit Designations
1.	JAN2N3251A	PNP	TO-18	18	Q1401, Q1501*, Q1502*, Q1503*, Q2001, Q2002, Q3301, Q4101, Q4102, Q4201, Q6301*, Q8101, Q8102, Q8103 Q8201, Q8202, Q8301, Q8302
2.	JAN2N2907A	PNP	TO-18	15	Q3101, Q3401, Q3402, Q3501, Q3502, Q3601, Q3701, Q4202, Q4302, Q4303, Q5101, Q5103, Q5205, Q8503,
3.	JAN2N2222A	NPN	TO-18	16	Q2102, Q4301, Q5102, Q5201, Q5202, Q5203, Q6401*, Q6402, Q7203, Q7204, Q8401, Q8403, Q8501, Q8502, Q8504
4.	JAN2N2905A	PNP	TO-39	4	Q2101, Q2103, Q5104, Q7205
5.	JAN2N3792 (2)	PNP	TO-203AA	6	Q9401, Q9402, Q9403, Q9404, Q9405, Q9406
6.	JAN2N4948 (3)	UJT	TO-18	1	Q8402
7.	2N5868	PNP	TO-3	4	Q201/Q402, Q202/403, Q7201 Q7202
8.	2N5681	NPN	TO-5	3	Q1601, Q1602, Q7001
			Total	67	

NOTE:

1. * Indicates C_{ob} is controlled.
2. Packaged in JEDEC TO-203AA.
3. Intrinsic stand-off ratio is 0.66 minimum.

TABLE 3.5.3. SILICON DIODES AND USAGE

	DIODE TYPE	QTY	CIRCUIT DESIGNATIONS
1.	JAN1N538	1	CR302
2.	JAN1N645	32	CR351,CR404,CR405,CR411,CR1005,CR1601,CR1602, CR1603,CR1604,CR1605,CR2101,CR2102,CR2104, CR2105,CR5101,CR5102,CR5103,CR5206,CR5208, CR5209,CR7003,CR7004,CR7101,CR7102,CR7103, CR7104,CR7105,CR7106,CR7107,CR7108,CR7109, CR7110
3.	JAN1N649	2	CR7001,CR7002
4.	JAN1N752A	3	CR2103,CR5201,CR8101
5.	JAN1N757A	2	CR3601,CR5207
6.	JAN1N759A	2	CR7205,CR8505
7.	JAN1N965B	1	CR3101
8.	JAN1N968B	1	CR1004
9.	JAN1N1202	1	CR301
10.	JAN1N2992B	2	CR202,CR412
11.	JAN1N3998RA	1	CR6201
12.	JAN1N4148	29	CR413,CR1401,CR3102,CR3103,CR3201,CR3301, CR3602,CR3603,CR3701,CR3702,CR3703,CR4201, CR4202,CR5202,CR5203,CR5204,CR5205,CR7201, CR7202,CR8104,CR8105,CR8106,CR8201,CR8202, CR8203,CR8501,CR8502,CR8503,CR8504
13.	JAN1N4942	7	CR9001,CR9002,CR9011,CR9012,CR9013,CR9014, CR9015
14.	JAN1N4944	4	CR9003,CR9004,CR9005,CR9006
15.	JAN1N4948	4	CR9007,CR9008,CR9009,CR9010
16.	SM-C-318069 (ref. 1N4001)	1	CR5104
17.	SM-C-374845-1 (ref. 1N3488)	2	CR8102,CR8103
18.	SM-C-374847-1 (ref. 1N3565)	1	CR406
19.	SM-C-416324 (ref. 1N3550)	1	CR1301
20.	SM-B-416386 (ref. 1N3552)	1	CR1501
21.	SM-B-416394 (ref. 1N3551)	2	CR6301,CR6302



COLLECTOR IS INTERNALLY CONNECTED TO MOUNTING STUD

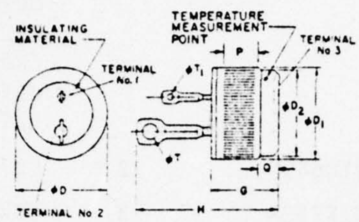
NOTE: Maximum recommended torque on mounting stud is 12 inch-pounds.

TO-36 WITH METAL LEADS

SYM	INCHES		MILLIMETERS	
	MIN.	MAX.	MIN.	MAX.
A	.440	.500	11.17	12.70
b	.120	.190	3.05	4.83
ϕD		1.250		31.75
N	.375	.500	9.53	12.70
K	.100	.312	2.54	7.92
L	.610	.710	15.49	18.03
T	.070	.120	1.778	3.05
T_1	.120	.145	3.05	3.68
R	.335	.355	8.51	9.02
ϕj	.090	.140	2.29	3.56

TO-203AA

Press-Fit
6-, 10-, and 15-A Triacs; 20- and 35-A SCR's



SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN.	MAX.	MIN.	MAX.	
ϕD	–	0.510	–	12.95	1
ϕD_1	0.501	0.505	12.726	12.827	2
ϕD_2	0.465	0.475	11.82	12.06	
G	0.330	0.380	8.39	9.65	
H	–	0.800	–	20.32	
P	0.100	–	2.54	–	2
Q	0.080	0.097	–	–	
ϕT	0.065	0.090	1.66	2.28	3,4
ϕT_1	0.035	0.068	0.89	1.72	

NOTES

1. Outline contour is optional within zone defined by ϕD and G min. and H max.
2. Straight knurl surface.
3. Elongated hole in terminal is optional.
4. Contour and orientation of terminal 1 and terminal 2 are not defined.
5. Terminal 1 to be shorter than terminal 2 for identification.

92CS-23134R1

FIGURE 3.5.4. CASE COMPARISON: TO-36 vs TO-203AA

3.6.2 LM-3075D (FM IF Amp, Lim and Det, Audio Pre-Amp & Reg)

For the A4200A (Receiver 3rd, 4th and 5th IF Amplifiers, Limiter and Discriminator), an integrated circuit (FM IF, Subsystem, Type LM3075D) is incorporated. This IC has been used widely in commercial applications. In particular, its performance has been test proven on the ARC-150/ARC-164 airborne radios. This device meets the requirements of MIL-M-38510, Class B.

With this IC, the new A4200A circuit assembly is drastically simplified. The gain has been stabilized and alignment has been simplified by reducing the number of tuning coils from seven to a single quadrature coil. Also, the requirement for matched diodes is eliminated.

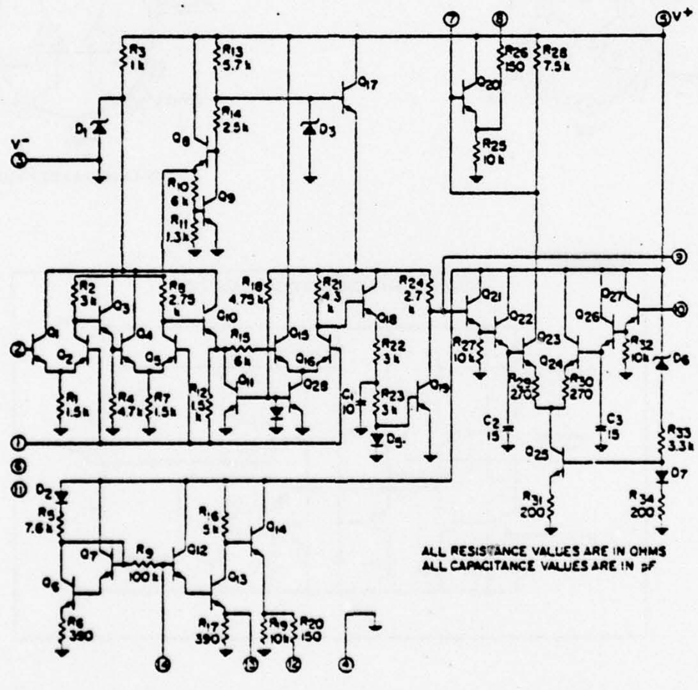


FIGURE 3.6.2. SCHEMATIC DIAGRAM FOR LM-3075D

3.6.3 JM38510/10102 BIC (747 Dual Op Amplifier)

The A5200 Squelch Amplifier was redesigned with a microcircuit, Type MC1558, in the ECOM Technical Report #4448. An analysis of MC1558 versus the MIL-STD-IC, Type JM38510/10102, reveals that both are functionally identical for this application. The only difference is that the latter has a split power supply arrangement.

For this application the MIL-STD-IC is recommended.

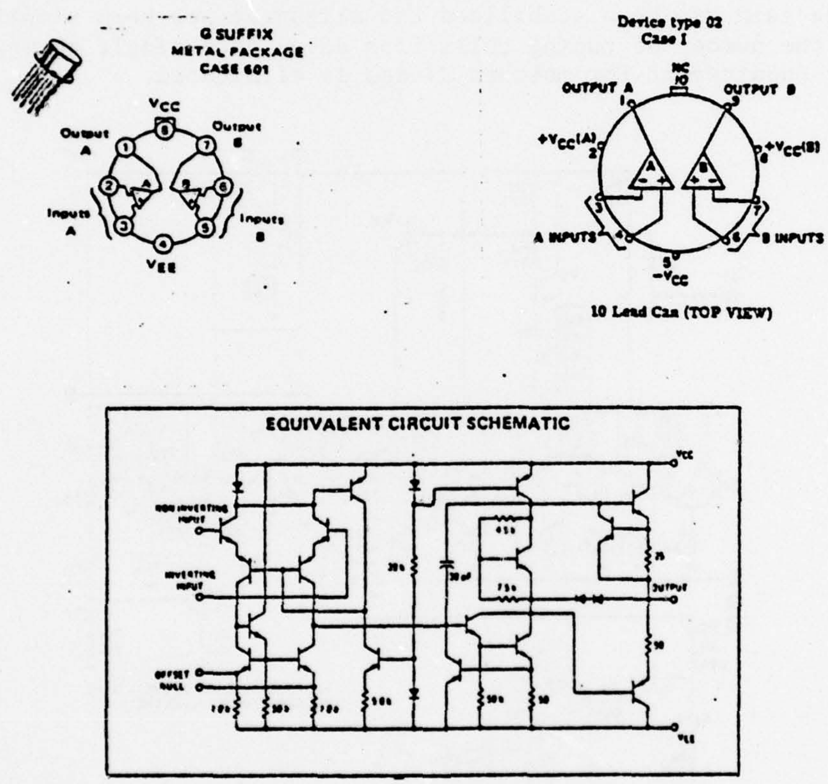


FIGURE 3.6.3. A - PACKGE LAYOUT AND B - SCHEMATIC FOR JM38510/10102 BIC

3.7 Module Redesign

There are three categories of modules to be redesigned in this Product Improvement Program. The first category of modules involved those that were completely redesigned as indicated in the contract in order to eliminate the deficiencies. Those are the A2000A, the A5200/A5300A and the A9000A/A9400B modules. For those modules, high reliability components were specified for use wherever possible.

The next category of modules included updated modules in which the modification of circuitry was necessary for improved radio performance. Those modules are the A3200A and the A4200A modules.

The third category of modules involves the simple replacement of germanium transistors in many modules. In many cases minor changes are made to PC Boards to eliminate interfering components. A total of twenty-two (22) modules are in that third category.

3.7.1 A2000A Crystal Switch Assembly

Two basic problem areas were attacked. The first major concern was the intermittent contacts of the switches. Since this module provides the reference spectrum for the frequency synthesizer, the consequence of losing contact is detrimental to the radio operation. Secondly, the present frame assembly requires a seven-piece construction which makes mechanical alignment very difficult.

To resolve those critical areas of concern, the Switch Assembly was redesigned from the present spherical contact to a sharp edge contact with wiping action. Also, the frame assembly was changed from a seven-piece construction to a two-piece casting resulting in easier alignment techniques and long term mechanical stability. (See the sketches in Figure 3.7.1.)

Electrically, established reliability parts are used whenever possible. Also, a new type of transformer was chosen to replace the present transformer that did not have enough tuning range and in which the core adjustments were unstable. The new transformer assembly involves a vertically mounted, single-mold, nylon coil form in which the tuning core is mounted securely. The transformer windings are wrapped externally around the coil form. Such transformer construction allows for improved tuning range and higher reliability.

The germanium transistor, JAN2N499A, was replaced with a silicon transistor, JAN2N3251A. The new schematic and performance data are attached in Appendices A and D respectfully.

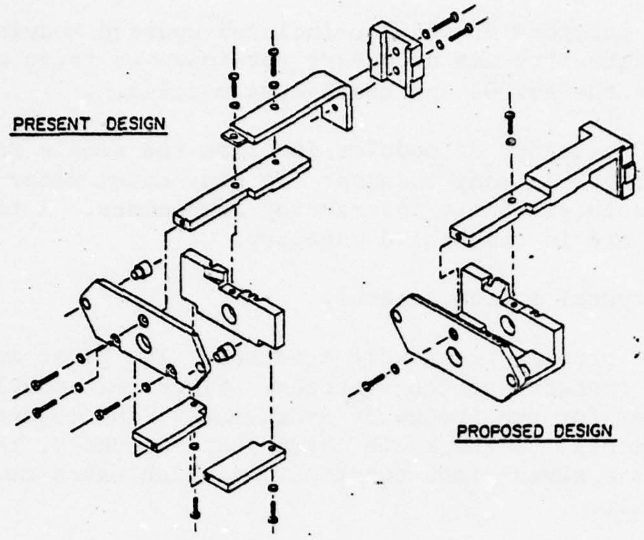


FIGURE 3.7.1. A2000 CASTINGS

3.7.2 A5200A/A5300A Squelch Amp and Filter

The main problem concerning these modules was the difficulty in adjusting the squelch threshold point and maintaining that point during various operating conditions (temperature, input voltage, variations between units, etc.). That was primarily due to the inability of the relay-driving, DC amplifier to maintain the operating point.

The modules were completely redesigned as described in the ECOM technical report #4448 including a few circuit features that were added as deemed necessary. Namely, during radio operation extra transistor switches were needed to disable the squelch relay when the front panel switch was in the "OFF" position. Also, the new voltage comparator circuit was driving the squelch relay to an excessive "chatter", when the signal level was approaching the threshold point. By adding a low pass filter in the noise channel and by providing a slight amount of positive feedback to the comparator, the "chattering" was reduced to an acceptable rate. The established reliability parts were specified wherever possible for those modules as the contract required. The high precision filter components were specified similar to those parts used on the PRC-77, A54A, squelch amp module.

The performance of the new A5200A/A5300A Squelch Amp and Filter assembly was significantly improved:

1 The alignment procedure is simple and definite.

2 The gain and the threshold points are stable.

3 Unit-to-unit performance variation is minimal.

The new modules' schematics and performance data are attached in Appendices A and D, respectively.

3.7.3 A9000A/A9400B Power Supply

The major problem concerning the power supply was the high rate of transistor failure due to improper switching and excessive heat build-up at the transistors.

The A9000A assembly was completely redesigned to eliminate the above deficiencies by:

1 Incorporating a two-transformer converter technique to restrict the load-line within the safe operating area of the transistor,

2 Increasing the operating frequency from approximately 2 kHz to 4 kHz,

3 Choosing a fast switching transistor (2N3792) and by using fast recovery diodes in the rectifier circuits (JAN1N4942, JAN1N4944 and JAN1N4948),

4 Replacing the three capacitors at the +700VDC rectifier with a single high voltage capacitor.

Also, the A9400B transistor adapter assembly was redesigned to accommodate a TO-203AA press-fit package in order to increase the heat absorption capacity and the radiating surface. The new A9000A/A9400B power supply performance is significantly better than the present package as shown in the test data attached. Not only does the silicon device have a higher operating temperature limit (200°C) than the germanium device (100°C), but the actual temperature rise at the collector case is lower than before. This is due to the higher efficiency (typ 88-90%) obtained and the usage of a better heatsink design in the new package.

(See the Temperature Data Attached in Appendix D.)

Another important consideration related to the A9000A/A9400B Power Supply improvement involves the 400 Hz blower motor. During lab testing Memcor Engineering discovered a problem in which excessive voltage was available at the blower motor terminals. Load variations among the blower motors were found to be the cause. Three different types of blower motors were being used in the AN/VRC-12 radios. The most abundant type in the field (TRW-Globe) was examined thoroughly and the corresponding blower motor drawing, SM-C-374852, was modified so that any future blower motors would be constructed properly. A formal letter was received from the TRW-Globe Engineering section assuring Memcor Engineering that the Globe motor can operate without failure at the new specification limits.

3.7.4 A3200A CRS Balanced Mixer

This module mixes the frequency of the receiver VFO with the appropriate 1 MHz Harmonic to produce the First IF (approx. 53 MHz) spectrum for the second CRS Mixer stage. The present circuit consists of a buffer amplifier driving a pair of matched diodes (Ge) and the 1 MHz Harmonics are injected to the one side of the matched diodes for mixing. A Faraday-Shielded output transformer balances the output spectrum. These diodes require a strict matching of characteristics and the transformer requires a special winding technique for proper operation. In the past, numerous design changes were attempted to correct the module's deficiency. The primary problem was a potential false locking symptom attributable to spurs in the system, which was a very serious problem for the CRS operation.

Similar problems were known to exist in the PRC-77, A44, balanced mixer module and were solved by utilizing a silicon, monolithic, integrated circuit, transistor array device (CA3018A) in the associated balanced mixer circuit. The A3200A CRS Balanced Mixer was upgraded in a manner similar to the circuit found in the A44A module of the siliconized AN/PRC-77 Radio. (See Attached Schematic and test data in Appendices A and D, respectively.)

In this new circuit, the IC (CA3018A) was arranged as a differential amplifier pair using another transistor connected as a switch for the pair. The VFO signal is fed to the differential amplifier's base inputs through an input transformer and a balanced output transformer is connected across the collectors of the differential amplifier pair. The 1 MHz Harmonics are driving the switching transistor.

The advantages to this type of mixer are:

1 The signal is balanced at the input and at the output.

2 The output operates at a higher Q.

3 The mixer gain is higher than a conventional diode mixer.

4 By using a single IC (Monolithic), the device's characteristics and temperature matching are superior to the discrete devices.

For this type of mixing operation the higher harmonics of the local oscillator are not needed other than the 1 MHz fundamental spectrum, but, for interchangeability reasons, the A3100A harmonic generator was retained at its present configuration. The new module reveals a significant reduction of higher harmonic mixing at the output. The output is peaked at the center frequency (53 MHz) and remains that way over the operating frequency band. (See the Attached Schematic and test data in Appendices A and D, respectively.)

3.7.5 A4200A Receiver IF Amp., Limiter and Discriminator

The present module has three stages of tuned IF Amplifiers and a limiter stage is driving a Travis type discriminator using a pair of germanium, matched diodes. A total of seven (7) transformers are needed in order to tune the module for proper gain and bandwidth. A total of seventy-two (72) electrical components are packaged in five, shielded, metal cases. Due to the relatively high gain (typically 70 dB) the present module has a likely tendency to regenerate producing a false quieting in the Receiver channels.

This effect further complicates the adjustment of the Squelch Amplifier. The IF Spectrum is not sufficiently filtered for the detected audio output, which drives the following preamplifier stages. This is not a desirable condition for the IF Tray (A4000) operation. The new A4200A module is upgraded by implementing an FM system, IC (Type LM3075D). This IC was developed and is widely used in consumer products and the chip is currently available from five (5) manufacturers (National, Fairchild, RCA, Motorola and Sprague). The IC provided an FM, IF subsystem while using a single monolithic chip. The three-stage, differential, emitter-follower-coupled section provided a typical voltage gain of 60 dB and features, because of its transistor constant-current sink, an output stage with exceptionally good limiting characteristics. The FM detector section, which utilizes a differential peak-detection circuit, requires only a single Quadrature coil. Therefore, tuning the detector circuit is simplified. Also, the audio preamplifier section provides a typical voltage gain of 21 dB. All these sections are regulated with Zener diodes and associated circuitry. The performance of the LM3075D device is well proven in many customer applications as well as in the airborne ARC-150 and ARC-164 radios.

The new A4200A module displayed an upgraded performance as follows:

1 Simplified assembly (from 72 parts to 39 parts)
2 Easier alignment (from 7 coils to 1 coil)
3 Stabilized gain and output.

(See Attached Schematic and performance data in Appendices A and D, respectively.)

3.7.6 Remaining Modules

The remaining twenty-two (22) modules involve simple transistor conversions from germanium to silicon devices. In several cases, small changes in printed circuit board layouts were incorporated to accommodate the new silicon transistors and/or to eliminate interfering components. The actual printed circuit board layouts for all of the PIP modules are displayed in Appendix B.

4.0 COMMENTS

All of the modules involved in the Product Improvement Program were successfully siliconized. Consequently, two basic changes to the module drawing structure were incorporated:

1. Notices of Revisions (NOR's) were defined in the corresponding Engineering Change Proposals (ECP).

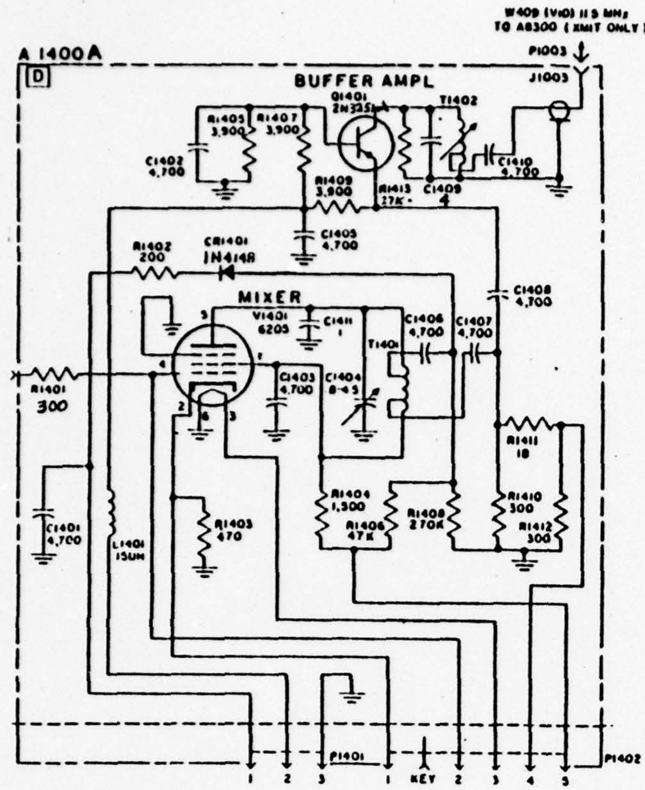
2. "SK-NEW-XXXXXX" drawings are similarly listed in the corresponding ECP's. Typical drawing changes involving the "SK-NEW-XXXXXX" format are data lists, schematics, material lists, etc.

It should be noted that several Government gage tests were modified by RFW's. Certain modules were redesigned and a few others were modified to optimize their performance. Although those modules performed adequately within the radio, the corresponding gages were incompatible. Therefore, Requests for Waivers were generated and approved to clarify discrepancies. Reference Appendix E for a copy of each RFW.

APPENDIX A

AN/VRC-12 PIP
ELECTRICAL SCHEMATICS

SIZE		REV.
A		



E-SYSTEMS INC.

MEMCOR DIVISION

41 East Park Drive, Huntington, Indiana 46750

ITEM	REQ'D	PART NUMBER	DESCRIPTION	MAT'L	MAT'L SPEC.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES

FRAC. ± DEC. ± ANGLES ±

DR	DATE
CHK	DATE
APP	DATE
APP	DATE

TITLE

A-1400A (Si)

Mixer and Buffer Amplifier

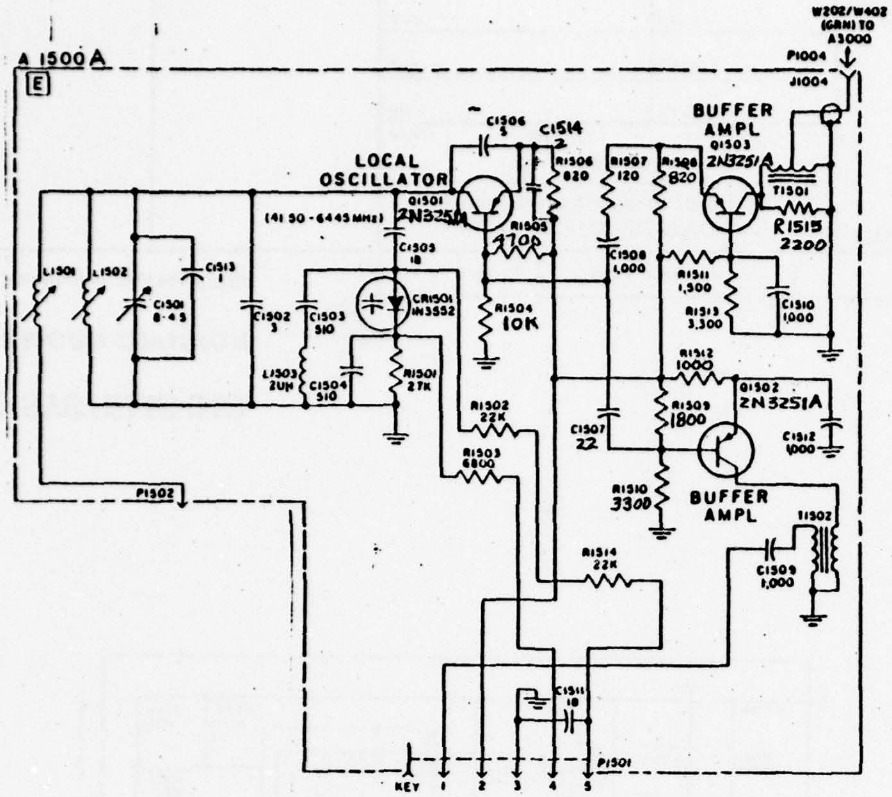
MATERIAL

FINISH

NEXT ASSY

REVISIONS

SCALE SHEET NO. OF SIZE A REV.



E-SYSTEMS INC.

MEMCOR DIVISION

41 East Park Drive, Huntington, Indiana 46750

ITEM	REQ'D	PART NUMBER	DESCRIPTION	MAT'L	MAT'L SPEC.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES

FRAC. ± DEC. ± ANGLES ±

DR	DATE
CHK	DATE
APP	DATE
APP	DATE
NEXT ASSY	

REVISIONS

TITLE

A-1500A (Si)

Local Oscillator and Buffer Amplifiers

MATERIAL

FINISH

SCALE

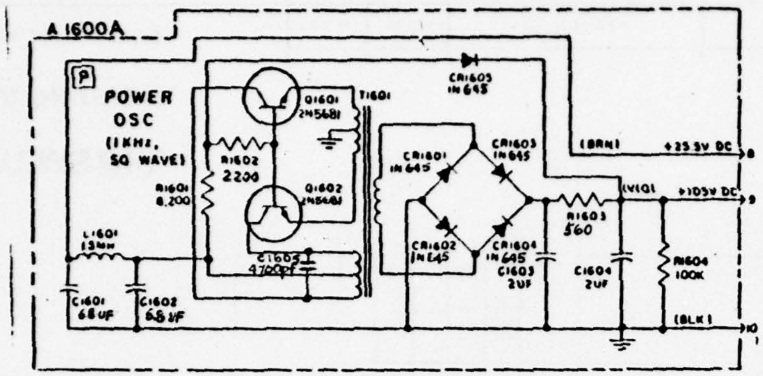
SHEET NO. OF

SIZE A

REV.

SIZE A

REV.



E-SYSTEMS INC.

MEMCOR DIVISION

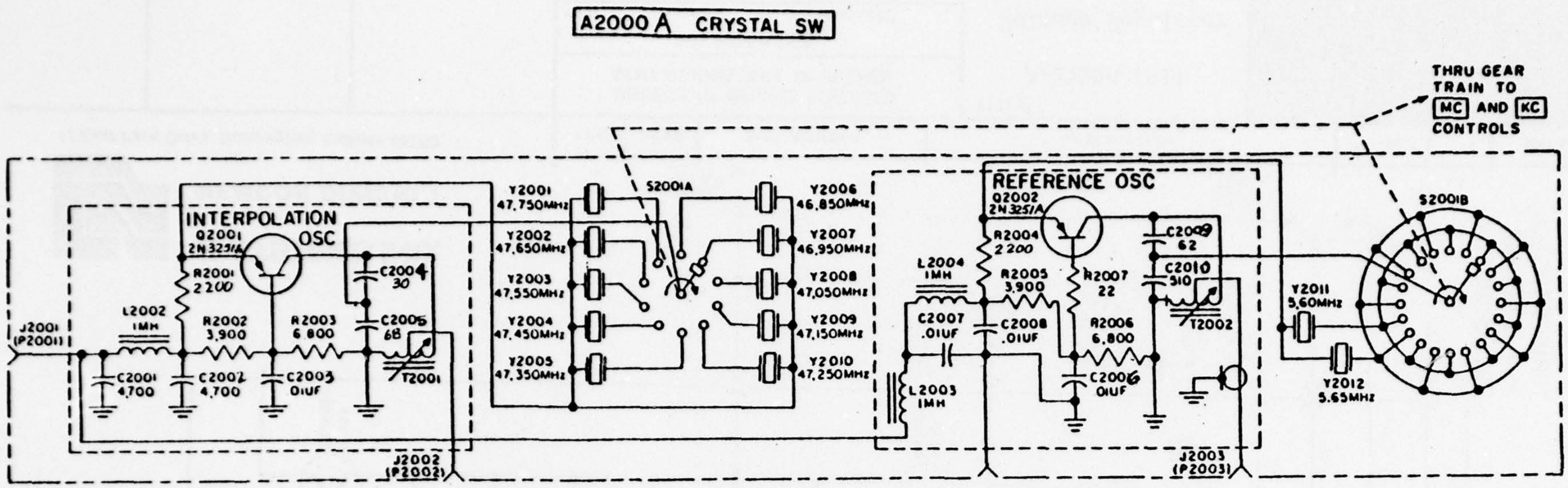
41 East Park Drive, Huntington, Indiana 46750

ITEM	REQ'D	PART NUMBER	DESCRIPTION	MAT'L	MAT'L SPEC.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		TITLE A-1600A (Si) VHF Tuner Power Supply
TOLERANCES FRAC ± DEC. ± ANGLES ±		[redacted]
DR	DATE	
CHK	DATE	
APP	DATE	MATERIAL · FINISH
APP	DATE	
NEXT ASSY		CALI · SH · NO. OF · SIZE A · REV.

SIZE A · REV

REVISIONS



E-SYSTEMS INC.

MEMCOR DIVISION

41 East Park Drive, Huntington, Indiana 46750

ITEM	REQ'D	PART NUMBER	DESCRIPTION	MAT'L	MAT'L SPEC.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES

FRAC ± DEC. ± ANGLES ±

DR DATE

CHK DATE

APP DATE

APP DATE

NEXT ASSY

REVISIONS

TITLE

A-2000A (Si)

Crystal Switch Assembly

MATERIAL

FINISH

SCALE

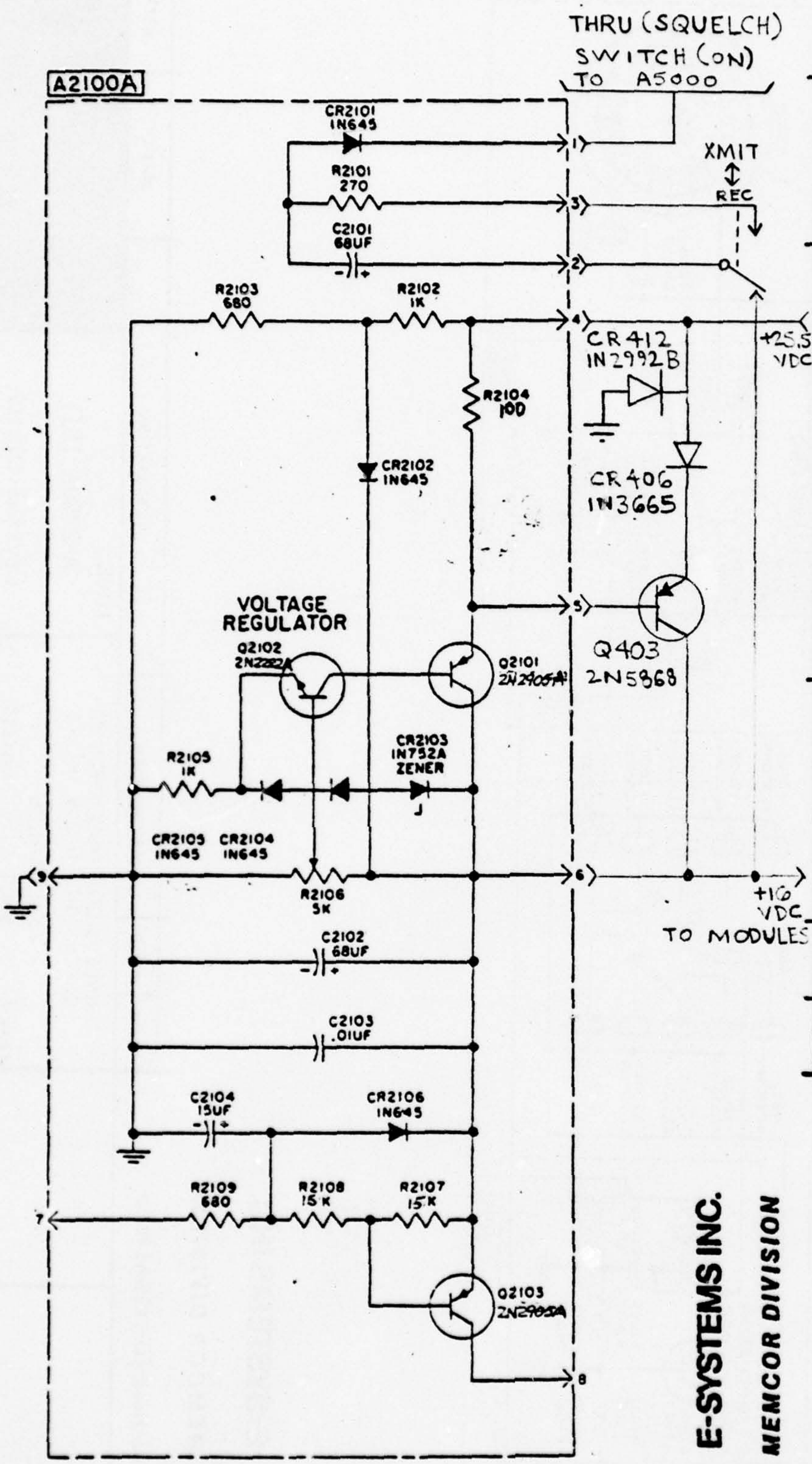
SHEET NO.

SIZE A

REV.

SIZE A

REV.



E-SYSTEMS INC.

MEMCOR DIVISION

41 East Park Drive, Huntington, Indiana 46750

TITLE A-2100A (Si) Voltage Regulator

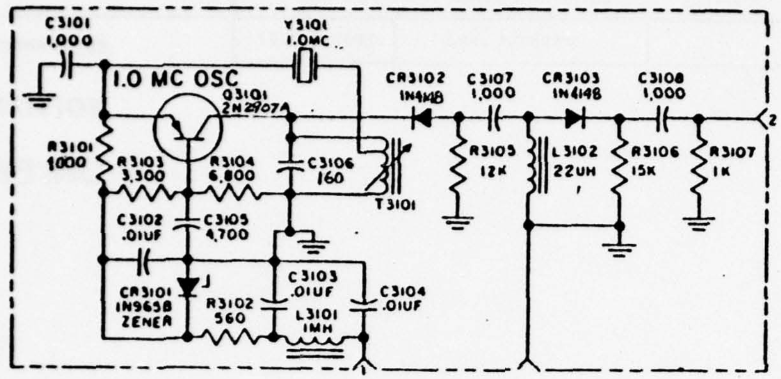
SIZE A

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES

SIZE A | REV

A3100A CRS HAR GEN



E-SYSTEMS INC.

MEMCOR DIVISION

41 East Park Drive, Huntington, Indiana 46750

ITEM	REQ'D	PART NUMBER	DESCRIPTION	MAT'L	MAT'L SPEC.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES

FRAC. ± DEC. ± ANGLES ±

DR T. PHILLIPS	DATE	
CHK	DATE	
APP	DATE	
APP	DATE	

NEXT ASSY

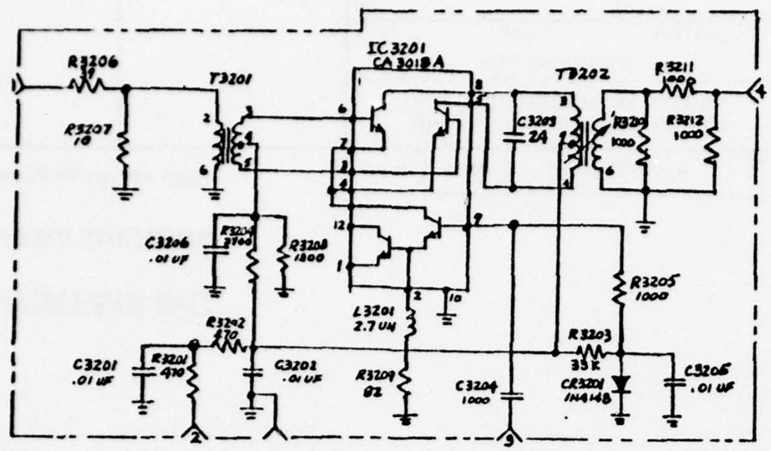
REVISIONS

TITLE
A-3100A (Si)

CRS Harmonic Generator

MATERIAL | FINISH

SCALE | SHEET NO. OF | SIZE A | REV



E-SYSTEMS INC.

MEMCOR DIVISION

41 East Park Drive, Huntington, Indiana 46750

ITEM	REQ'D	PART NUMBER	DESCRIPTION	MAT'L	MAT'L SPEC.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES

FRAC. ± DEC. ± ANGLES ±

DR	DATE
CHK	DATE
APP	DATE
APP	DATE

NEXT ASSY

REVISIONS

TITLE

A-3200A (Si)

CRS Balanced Mixer

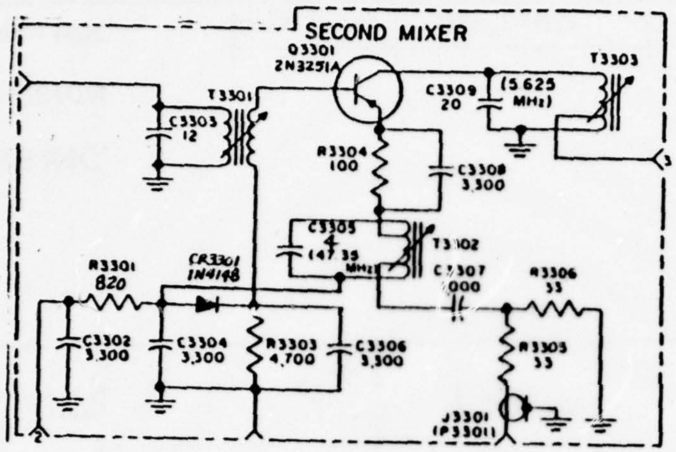
MATERIAL

FINISH

SCALE SHEET NO. SIZE A REV.

SIZE A | REV

A3300A | CRS 2ND MIXER



E-SYSTEMS INC.

MEMCOR DIVISION

41 East Park Drive, Huntington, Indiana 46750

ITEM	REQ'D	PART NUMBER	DESCRIPTION	MAT'L	MAT'L SPEC.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES

FRAC. ± DEC. ± ANGLES ±

DR	DATE
CHK	DATE
APP	DATE
APP	DATE

NEXT ASSY

REVISIONS

TITLE

A-3300A (Si)

CRS Second Mixer

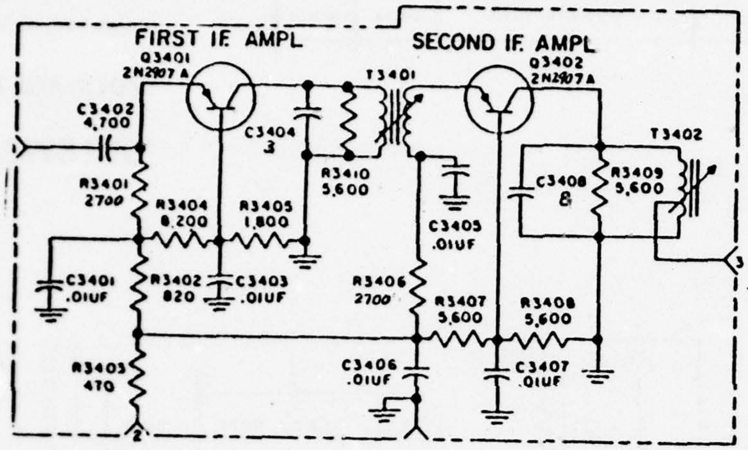
MATERIAL

FINISH

SCALE | SHEET NO. OF | SIZE A | REV.

SIZE		REV.
A		

A3400 A | CRS 1ST & 2ND IF AMPL



E-SYSTEMS INC.
MEMCOR DIVISION
41 East Park Drive, Huntington, Indiana 46750

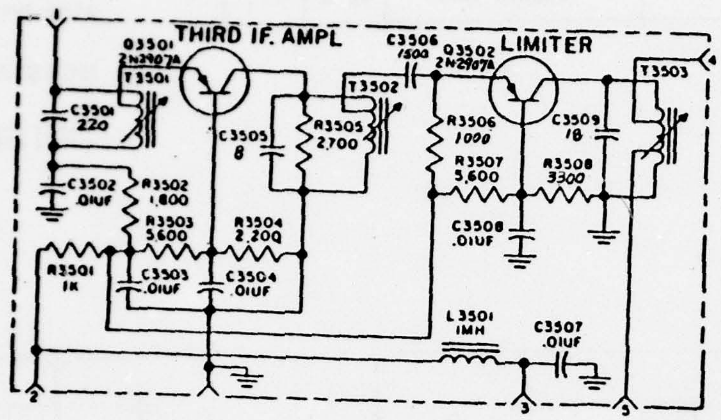
ITEM	REQ'D	PART NUMBER	DESCRIPTION	MAT'L	MAT'L SPEC.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	TITLE A-3400A (Si) CRS First and Second IF Amplifier
TOLERANCES FRAC ± DEC ± ANGLES ±	
DR / DATE	
CHK / DATE	
APP / DATE	MATERIAL / FINISH
APP / DATE	
NEXT ASSY	SCALE / SH / NO. / SIZE A / REV.

REVISIONS

SIZE A		REV.

A3500 A CRS 3RD IF AMPL & LIM



E-SYSTEMS INC.

MEMCOR DIVISION

41 East Park Drive, Huntington, Indiana 46750

ITEM	REQ'D	PART NUMBER	DESCRIPTION	MAT'L	MAT'L SPEC.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES

FRAC. ± DEC. ± ANGLES ±

DR	DATE
CHK	DATE
APP	DATE
APP	DATE
NEXT ASSY	

TITLE

A-3500A (Si)

CRS Third IF Amplifier and Limiter

MATERIAL

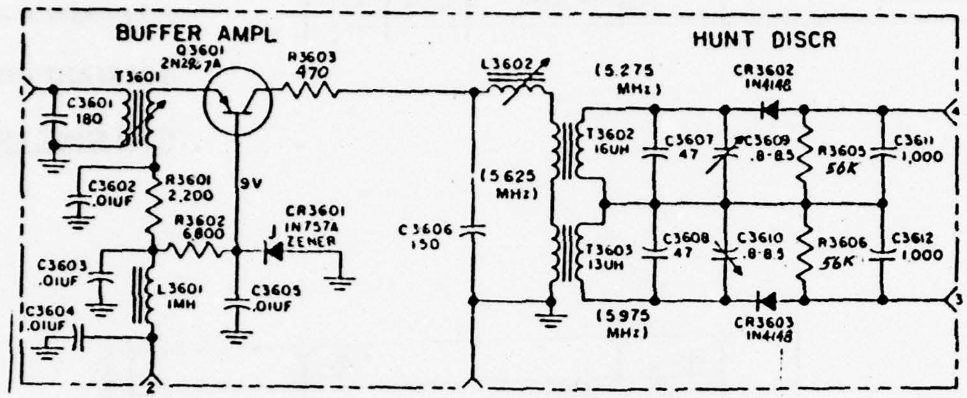
FINISH

SCALE	SHEET NO. OF	SIZE A		REV.

REVISIONS

SIZE A

A3600A CRS HUNT DISCR



E-SYSTEMS INC.

MEMCOR DIVISION

41 East Park Drive, Huntington, Indiana 46750

ITEM	REQ'D	PART NUMBER	DESCRIPTION	MAT'L	MAT'L SPEC.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES

FRAC ± DEC. ± ANGLES ±

DR	DATE
CHK	DATE
APP	DATE
APP	DATE

TITLE
A-3600A (Si)
CRS Hunt Discriminator

MATERIAL

FINISH

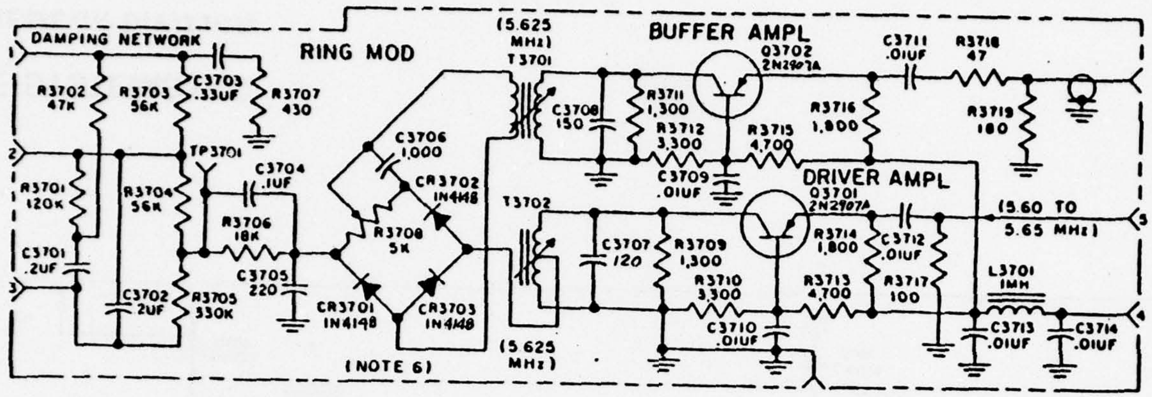
NEXT ASSY

REVISIONS

CALL SHEET NO. SIZE A REV.

SIZE		REV.
A		

A3700A CRS PHASE DISCR



E-SYSTEMS INC.

MEMCOR DIVISION

41 East Park Drive, Huntington, Indiana 46750

ITEM	REQ'D	PART NUMBER	DESCRIPTION	MAT'L	MAT'L SPEC.

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES

TOLERANCES

FRAC. ± DEC. ± ANGLES ±

DR	DATE
CHK	DATE
APP	DATE
APP	DATE
NEXT ASSY	

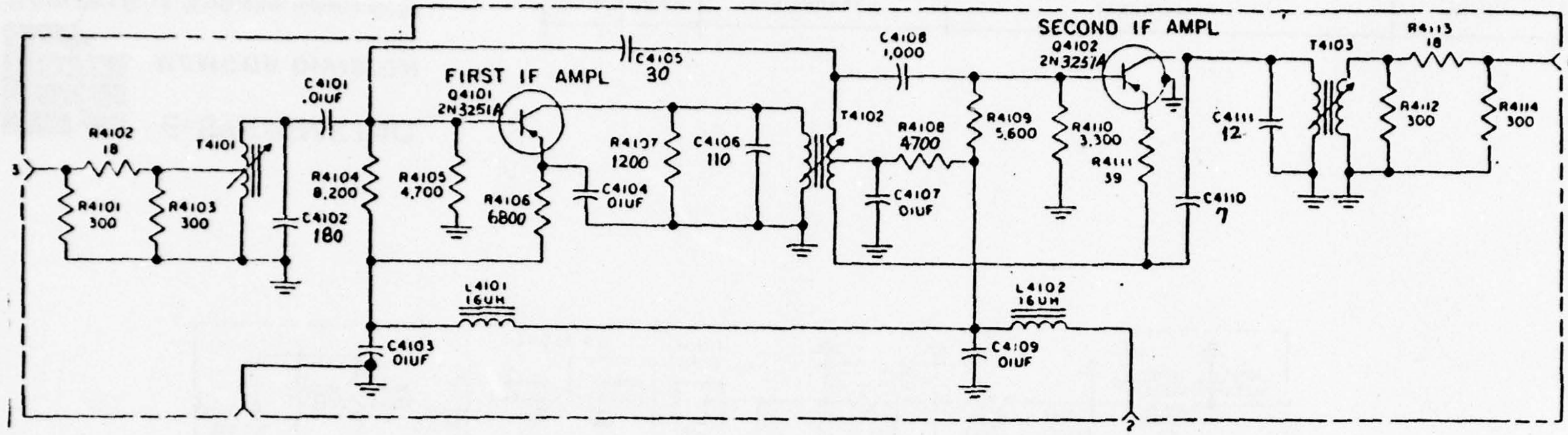
TITLE
A-3700A (Si)

CRS Phase
Discriminator

MATERIAL		FINISH	
SCALE	SHEET NO.	SIZE A	REV.

SIZE A | REV

A4100A | RCVR 1ST & 2ND IF AMPL



42

E-SYSTEMS INC.

MEMCOR DIVISION

41 East Park Drive, Huntington, Indiana 46750

ITEM	REQ'D	PART NUMBER	DESCRIPTION	MAT'L	MAT'L SPEC.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES

FRAC ± DEC ± ANGLES ±

DR DATE

CHK DATE

APP DATE

APP DATE

NEXT ASSY

TITLE

A-4100A (Si)

Receiver First and Second IF Amplifiers

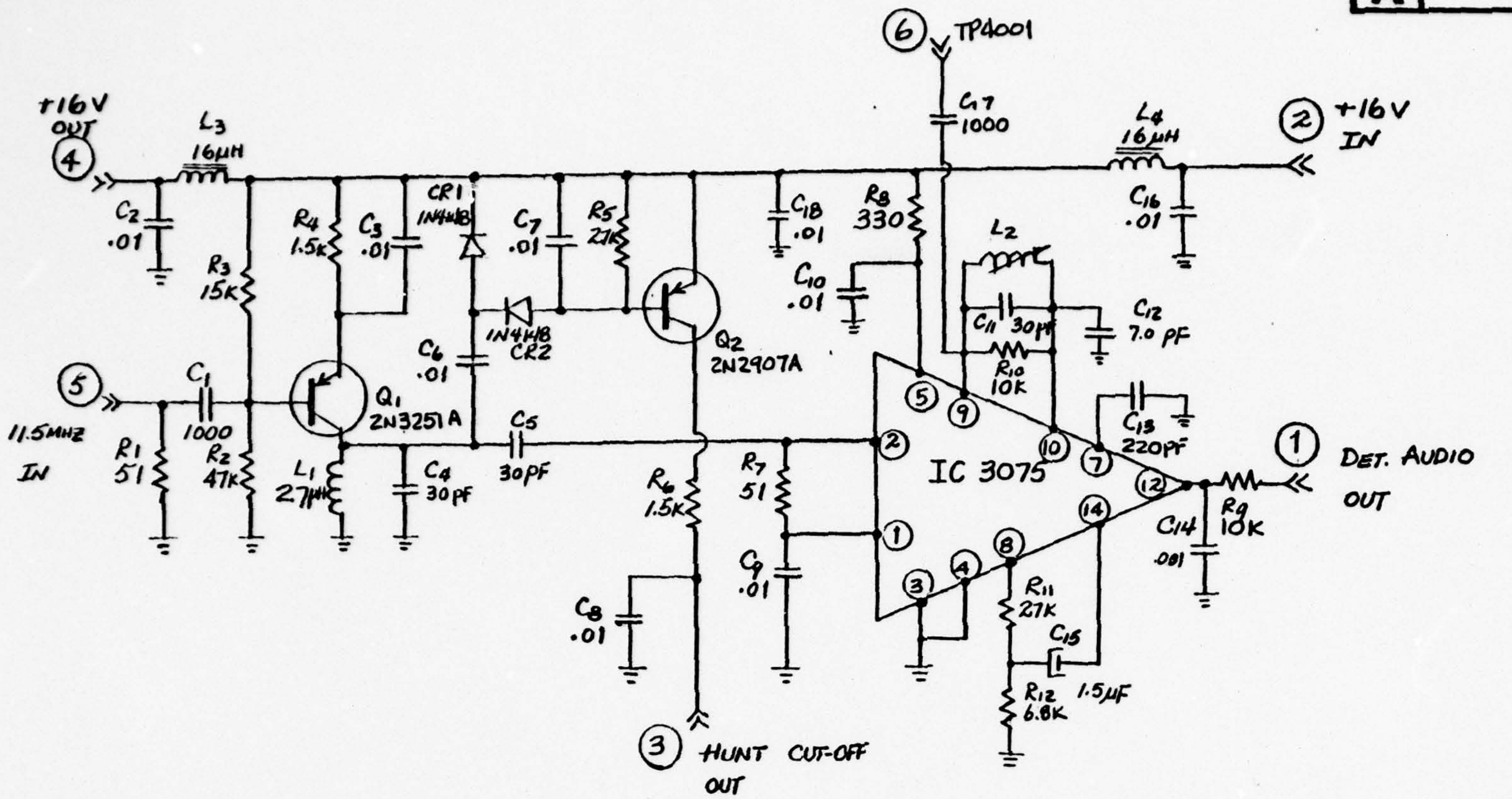
[redacted]

MATERIAL

FINISH

SCAL S NO OF

SIZE A | REV



w/o C18
R12
L4

E-SYSTEMS INC.
MEMCOR DIVISION
41 East Park Drive, Huntington, Indiana 46750

IC
RCA : CA3075
National: LM 3075
F.S.: µA3075
T.I: SN76675N
Sprague: ULN 2129A

C_{11} was 33pF
C_5 was 47pF
C_4 was 33pF
C_{12} was 10pF
L_1 was 3.3µH
C_{14} was .01 µF

REVISIONS

ITEM	REQ'D	PART NUMBER	DESCRIPTION	MAT'L	MAT'L SPEC.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES

FRAC. ± DEC. ± ANGLES ±

DR	Y. MIN	DATE 3-20-77
CHK		DATE
APP		DATE
APP		DATE

NEXT ASSY

TITLE
A-4200A (Si)
Receiver Third,
Fourth and Fifth IF
Amplifiers, Limiter
and Discriminator

MATERIAL

FINISH

SCALE

SHEET NO. OF

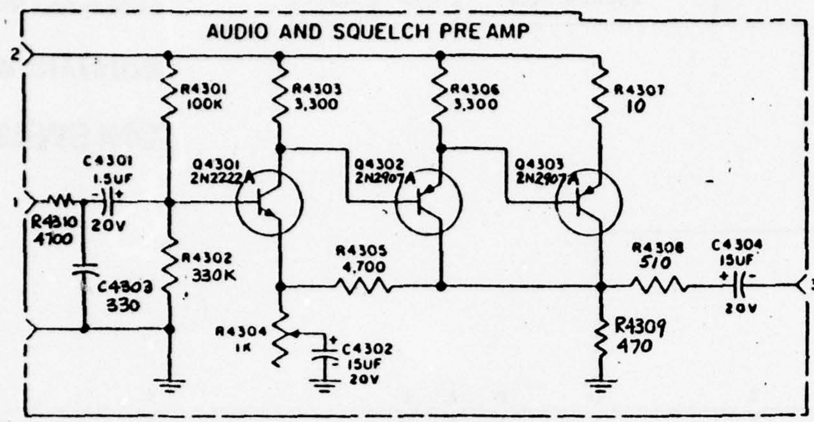
SIZE A

REV.

SIZE A

REV.

A4300 A RCVR AUDIO & SQUELCH PRE-AMPL



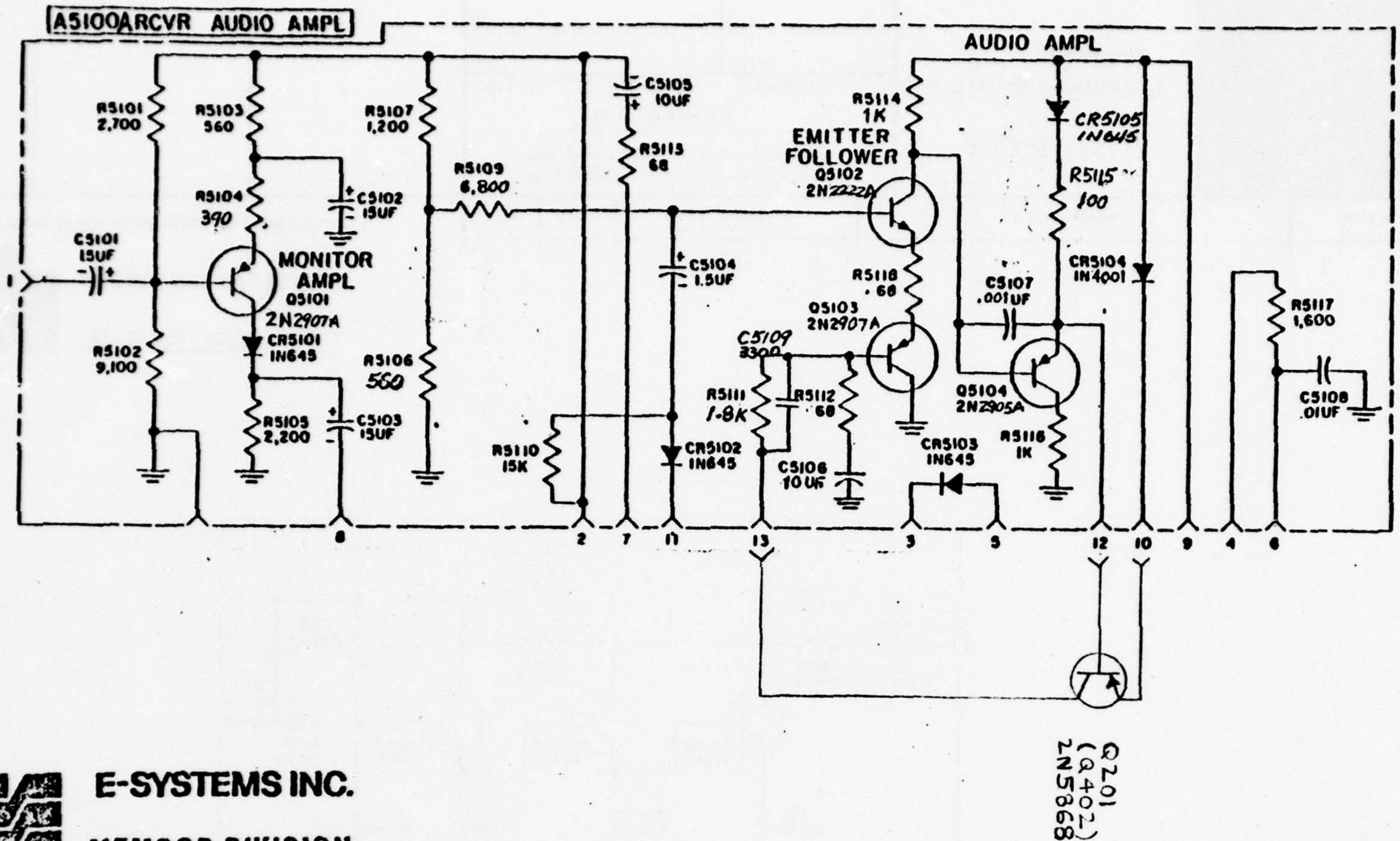
E-SYSTEMS INC.
MEMCOR DIVISION
41 East Park Drive, Huntington, Indiana 46750

ITEM	REQ'D	PART NUMBER	DESCRIPTION	MAT'L	MAT'L SPEC.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		TITLE A-4300A (Si) Audio and Squelch Pre-Amplifier	[redacted]
TOLERANCES FRAC ± DEC. ± ANGLES ±			
DR	DATE		
CHK	DATE		
APP	DATE	MATERIAL	FINISH
APP	DATE		
NEXT ASSY		SCALE	SHEET NO.
		SIZE A	REV.

REVISIONS

SIZE A REV.



E-SYSTEMS INC.

MEMCOR DIVISION

41 East Park Drive, Huntington, Indiana 46750

ITEM	REQ'D	PART NUMBER	DESCRIPTION	MAT'L	MAT'L SPEC

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES

FRAC. ± DEC. ± ANGLES ±

DR	Y. MIN	DATE	1-20-76
CHK		DATE	
APP		DATE	
APP		DATE	

NEXT ASSY

TITLE

A-5100A (Si)

Audio Amplifier

MATERIAL

FINISH

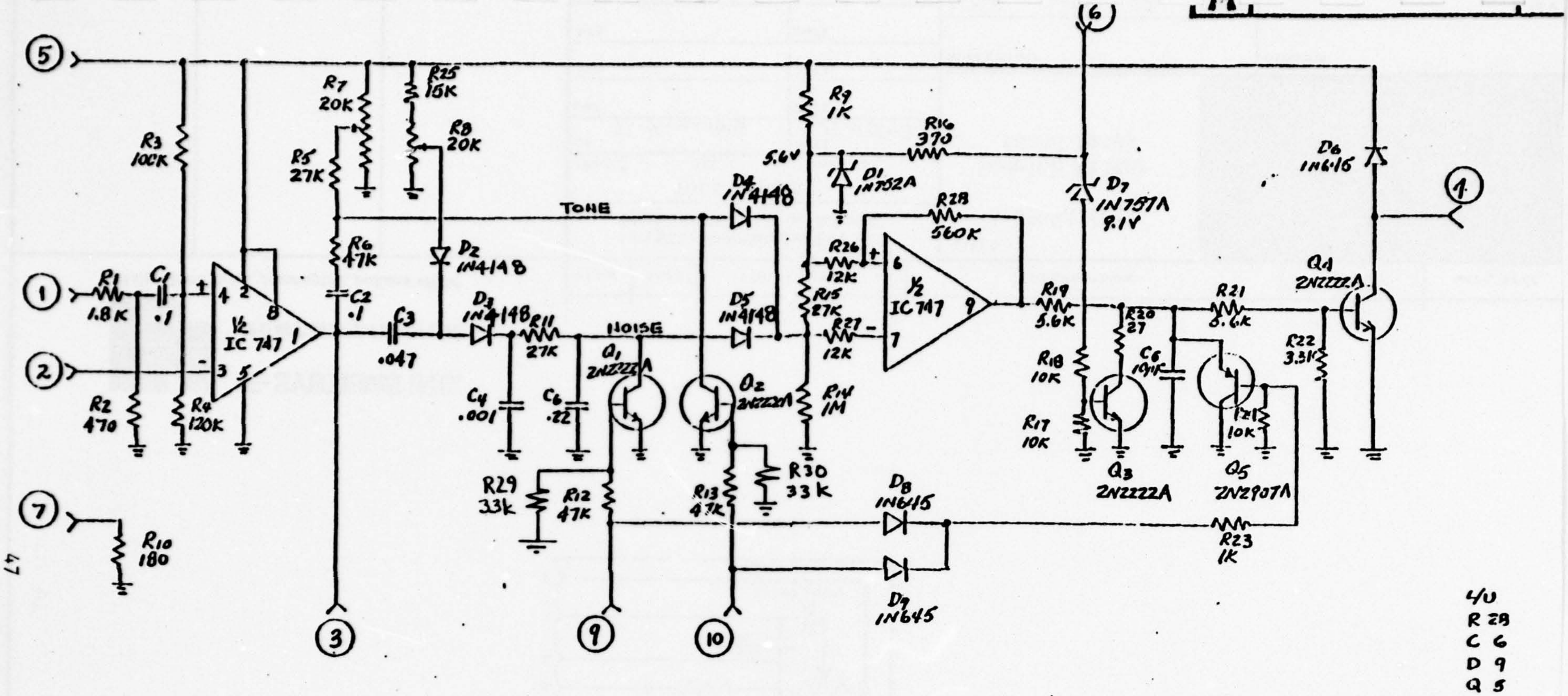
SCALE

SHEET NO

OF

SIZE A

REVISIONS



E-SYSTEMS INC.

MEMCOR DIVISION

41 East Park Drive, Huntington, Indiana 46750

ITEM	REQ'D	PART NUMBER	DESCRIPTION	MAT'L	MAT'L SPEC.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES

FRAC. ± DEC. ± ANGLES ±

DR Y.H.M DATE 4-28-77

CHK DATE

APP DATE

APP DATE

NEXT ASSY

TITLE A-5200A RECEIVER SQUELCH

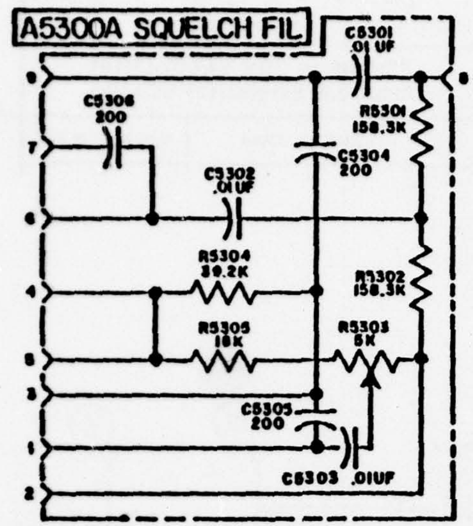
MATERIAL

FINISH

SCALE SHEET NO. SIZE A REV.

D7 WAS 1N757A

SIZE A | REV.



E-SYSTEMS INC.

MEMCOR DIVISION

41 East Park Drive, Huntington, Indiana 46750

ITEM	REQ'D	PART NUMBER	DESCRIPTION	MAT'L	MAT'L SPEC.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES

FRAC. ± DEC. ± ANGLES ±

DR T. PHILLIPS	DATE 8-15-77		
CHK	DATE		
APP	DATE		
APP	DATE		

TITLE
A-5300A (Si)

Squelch Filter
(Band Pass)

[redacted]

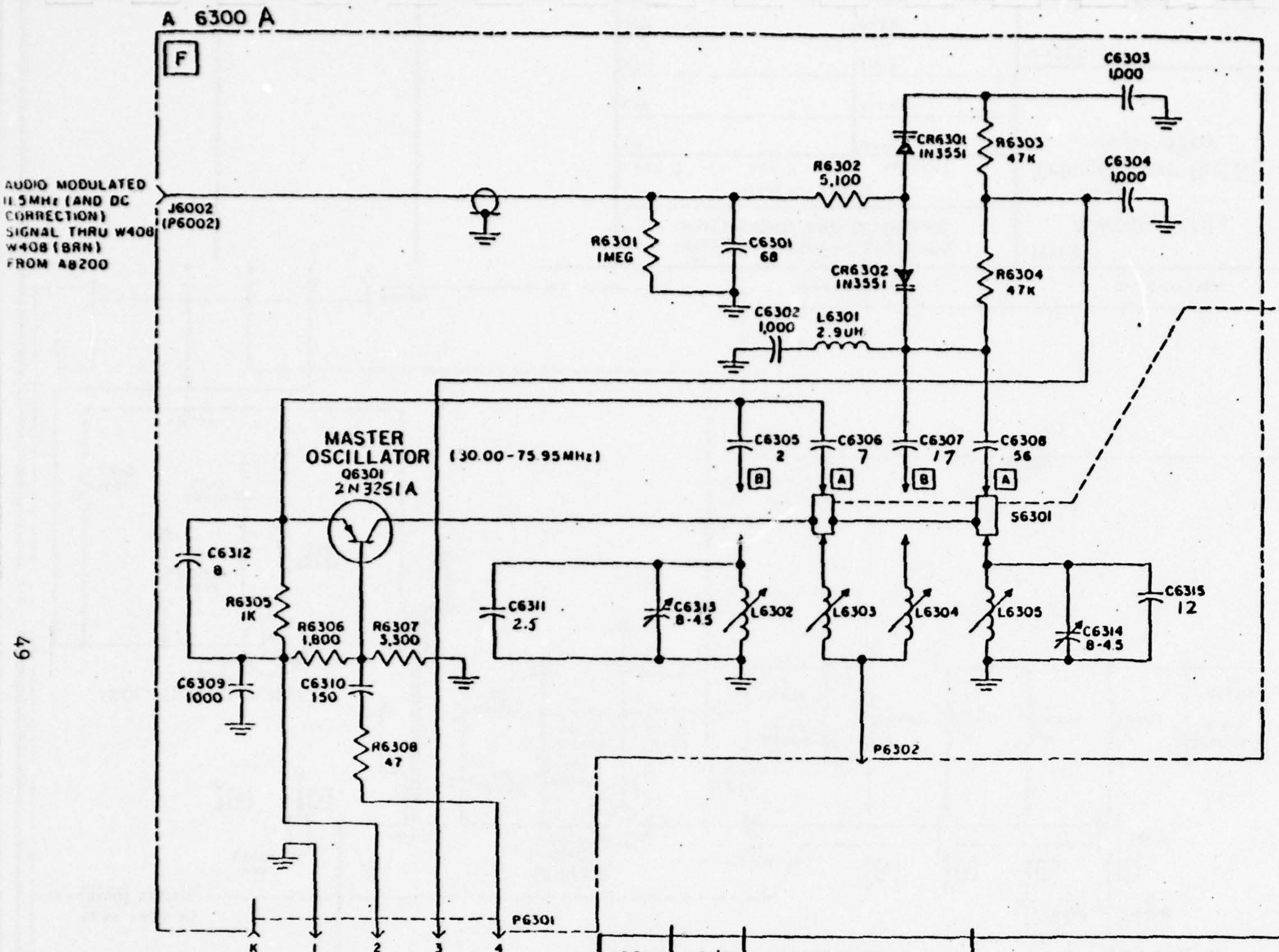
MATERIAL | FINISH

NEXT ASSY | SCALE | SHEET NO. OF | SIZE A | REV.

REVISIONS

SIZE A

REV



ITEM	REQ'D	PART NUMBER	DESCRIPTION	MAT'L	MAT'L SPEC.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES

FRAC. ± DEC ± ANGLES ±

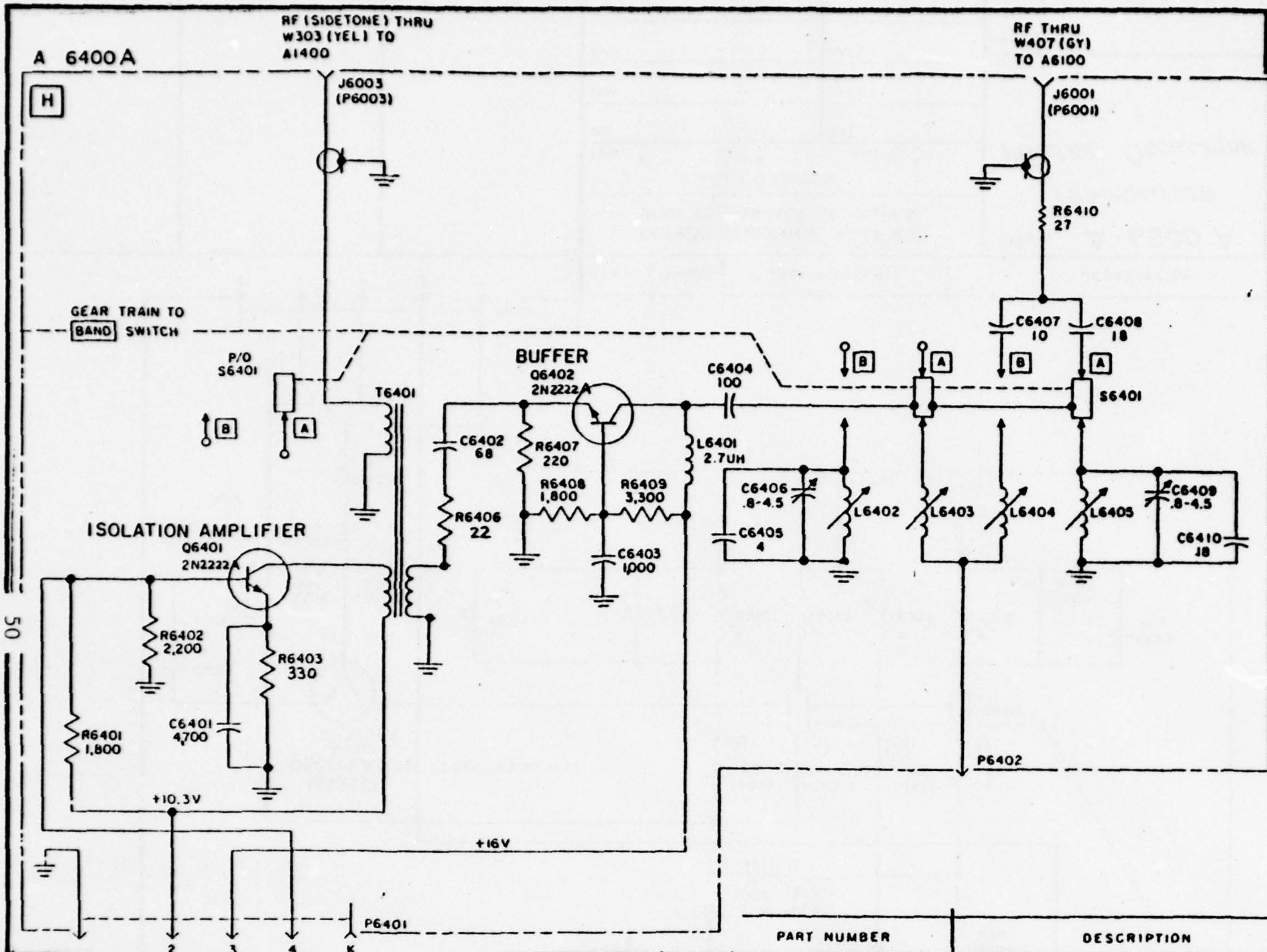
DR	DATE
CHK	DATE
APP	DATE
APP	DATE

TITLE A-6300 A TRANSMITTER MASTER OSCILLATOR (Si)

MATERIAL

FINISH

SCALE | SHEET NO. | SIZE | REV



PART NUMBER	DESCRIPTION	MAT'L	MAT'L SPEC.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES

FRAC ± DEC ± ANGLES ±

DR	DATE
CHK	DATE
APP	DATE
APP	DATE

NEXT ASSY

REVISIONS

TITLE
A-6400A (Si)
Transmitter Buffer Amplifier

MATERIAL

FINISH

SIZE A

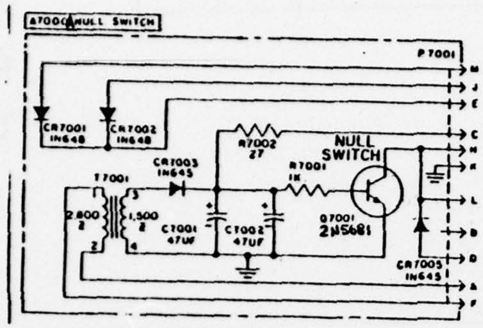
REV.

SCALE SH NO.

SIZE A

REV.

SIZE **A** | REV



E-SYSTEMS INC.

MEMCOR DIVISION

41 East Park Drive, Huntington, Indiana 46750

ITEM	REQ'D	PART NUMBER	DESCRIPTION	MAT'L	MAT'L SPEC.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES

FRAC ± DEC. ± ANGLES ±

DR	DATE
CHK	DATE
APP	DATE
APP	DATE

NEXT ASSY

REVISIONS

TITLE

A-7000A (Si)

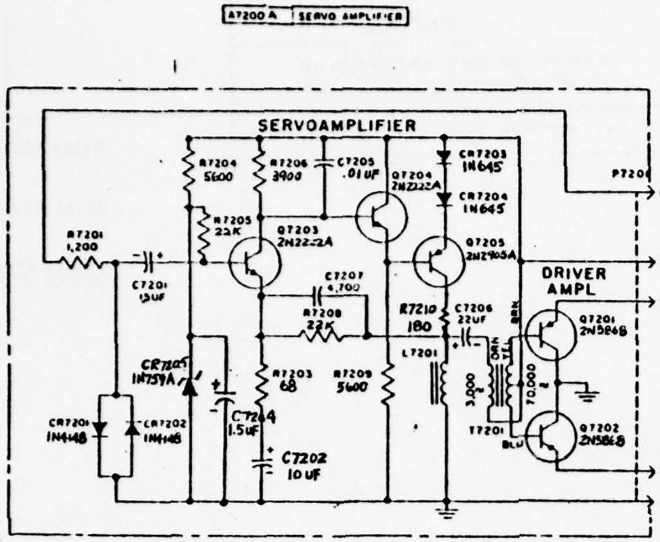
Null Switch

MATERIAL

FINISH

SCALE | SHEET NO. | SIZE A | REV.

SIZE A



E-SYSTEMS INC.

MEMCOR DIVISION

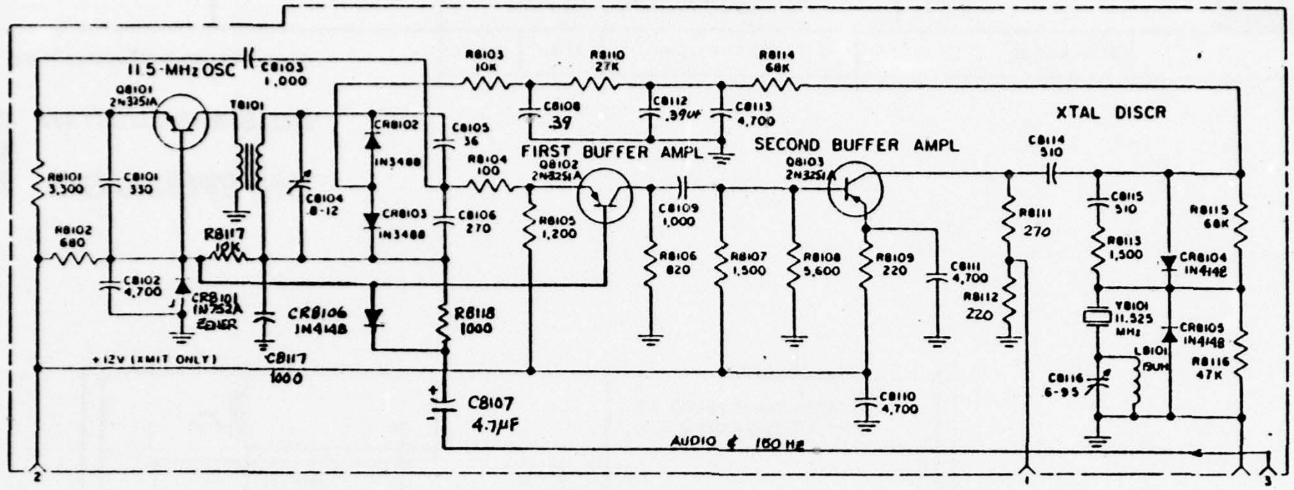
41 East Park Drive, Huntington, Indiana 46750

ITEM	REQ'D	PART NUMBER	DESCRIPTION	MAT'L	MAT'L SPEC.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		TITLE A-7200A (Si) Servo Amplifier
TOLERANCES FRAC ± DEC ± ANGLES ±		
DR	DATE	
CHK	DATE	
APP	DATE	MATERIAL / FINISH
APP	DATE	
NEXT ASSY		SCALE / SHEET NO. / SIZE A / REV

REVISIONS

A8100 A XMTR 11.5 MC MOD



E-SYSTEMS INC.

MEMCOR DIVISION

41 East Park Drive, Huntington, Indiana 46750

SIZE A		REV.

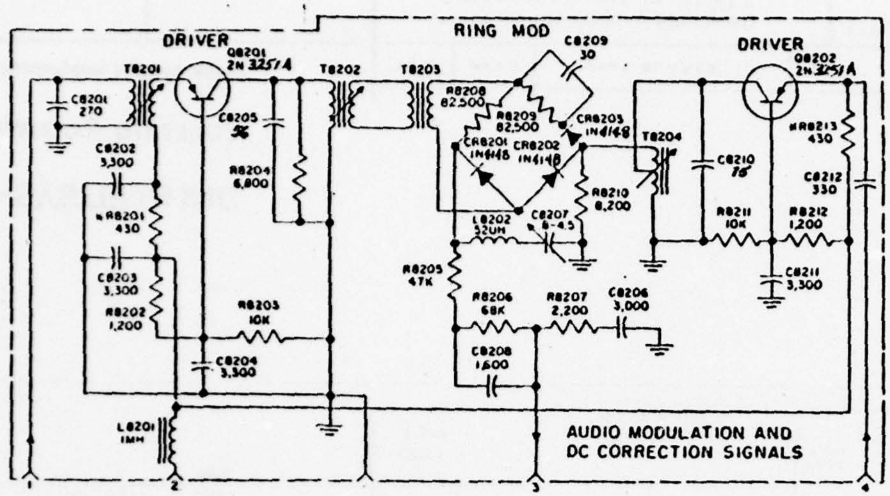
ITEM	REQ'D	PART NUMBER	DESCRIPTION	MAT'L	MAT'L SPEC.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	TITLE A-8100A (Si) Transmitter 11.5 MHz Modulator
TOLERANCES FRAC. ± DEC. ± ANGLES ±	
DR — DATE	
CHK — DATE	
APP — DATE	MATERIAL / FINISH
APP — DATE	
NEXT ASSY	SCALE / SHEET NO. OF / SIZE A / REV.

REVISIONS

SIZE A | REV.

A8200A XMTR PHASE DISCR



E-SYSTEMS INC.

MEMCOR DIVISION

41 East Park Drive, Huntington, Indiana 46750

ITEM	REQ'D	PART NUMBER	DESCRIPTION	MAT'L	MAT'L SPEC.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES

FRAC ± DEC. ± ANGLES ±

DR	DATE
CHK	DATE
APP	DATE
APP	DATE

TITLE

A-8200A (Si)

Transmitter
Phase Discriminator

MATERIAL

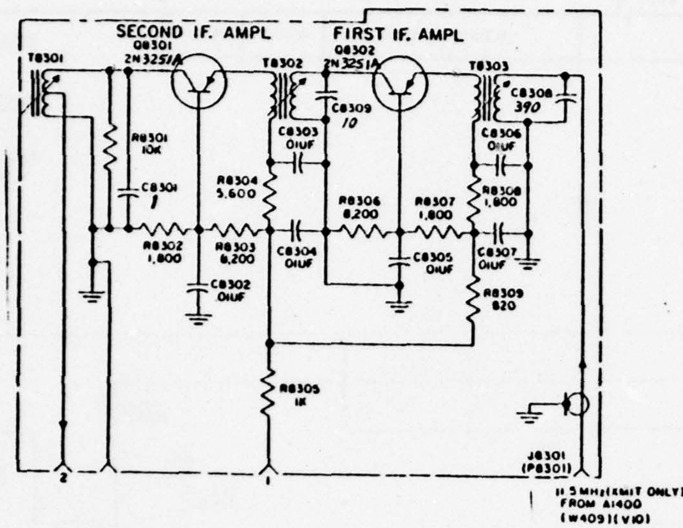
FINISH

NEXT ASSY

SCALE | SH NO. OF | SIZE A | REV.

REVISIONS

A8300A XMTR 1ST & 2ND IF AMPL



E-SYSTEMS INC.

MEMCOR DIVISION

41 East Park Drive, Huntington, Indiana 46750

ITEM	REQ'D	PART NUMBER	DESCRIPTION	MAT'L	MAT'L SPEC.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES

FRAC. ± DEC. ± ANGLES ±

DR	DATE
CHK	DATE
APP	DATE
APP	DATE

NEXT ASSY

REVISIONS

TITLE

A-8300A (Si)

Transmitter First and Second IF Amplifier

MATERIAL

FINISH

SCALE

SHEET NO.

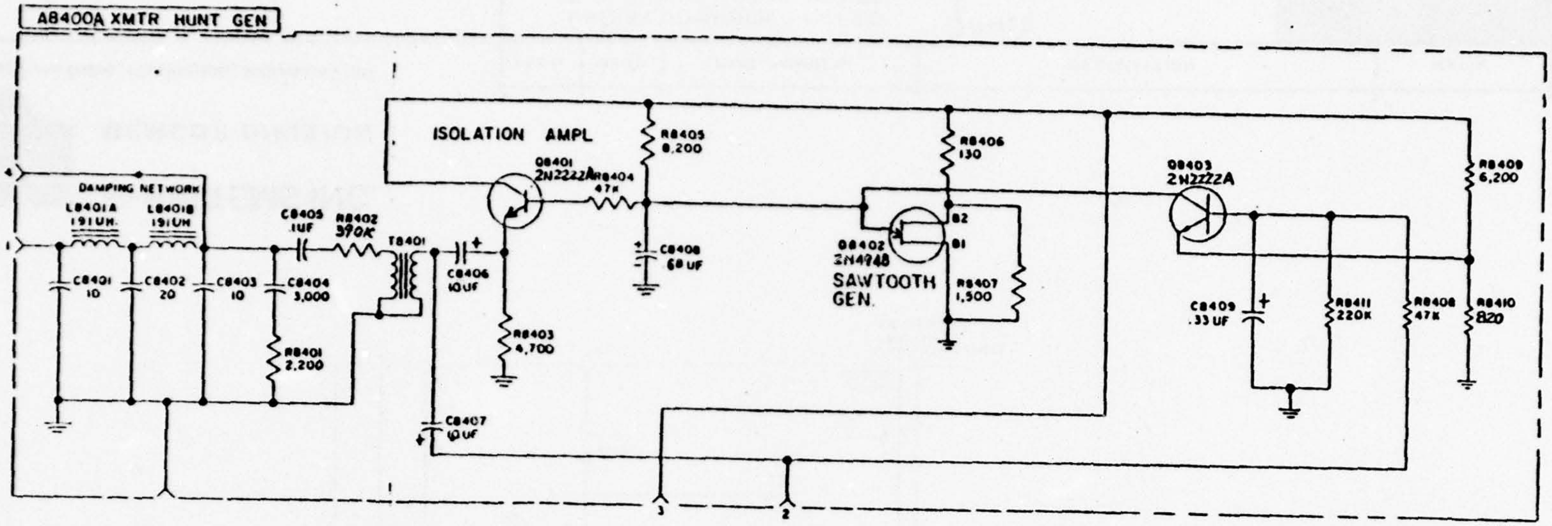
SIZE A

REV.

SIZE A

REV

SIZE		REV.
A		



E-SYSTEMS INC.

MEMCOR DIVISION

41 East Park Drive, Huntington, Indiana 46750

ITEM	REQ'D	PART NUMBER	DESCRIPTION	MAT'L	MAT'L SPEC.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES

FRAC ± DEC ± ANGLES ±

DR Y. MIN	DATE 6-20-77	
CHK	DATE	
APP	DATE	
APP	DATE	

TITLE

A-8400A (Si)

Transmitter Hunt Generator

MATERIAL

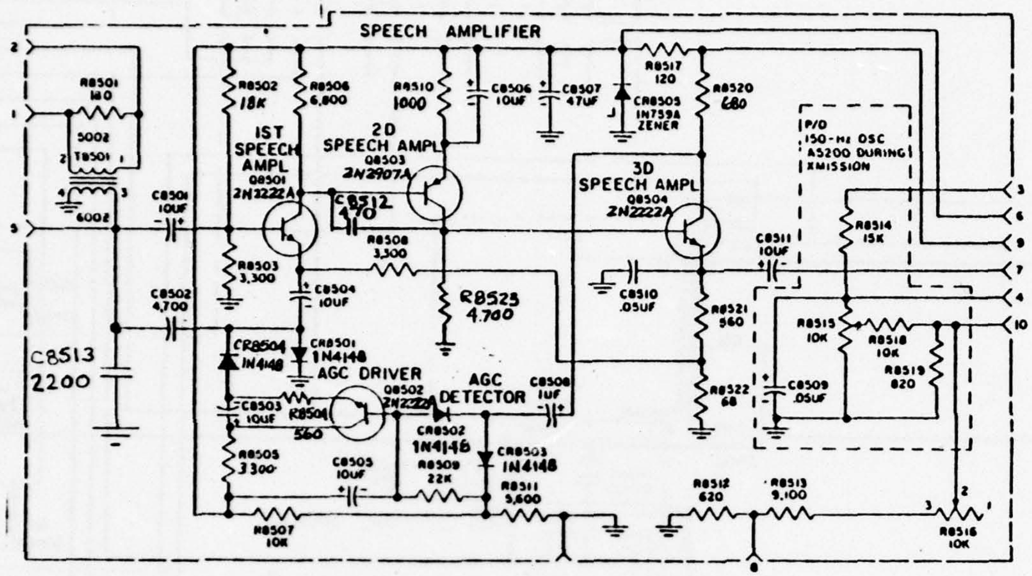
FINISH

NEXT ASSY

REVISIONS

SCALE SHEET NO. OF SIZE A REV.

A8500A XMTR SPEECH AMPL



E-SYSTEMS INC.

MEMCOR DIVISION

41 East Park Drive, Huntington, Indiana 46750

ITEM	REQ'D	PART NUMBER	DESCRIPTION	MAT'L	MAT'L SPEC.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES

FRAC ± DEC. ± ANGLES ±

DR	DATE
CHK	DATE
APP	DATE
APP	DATE

NEXT ASSY

REVISIONS

TITLE
A-8500A (Si)

Transmitter
Speech Amplifier

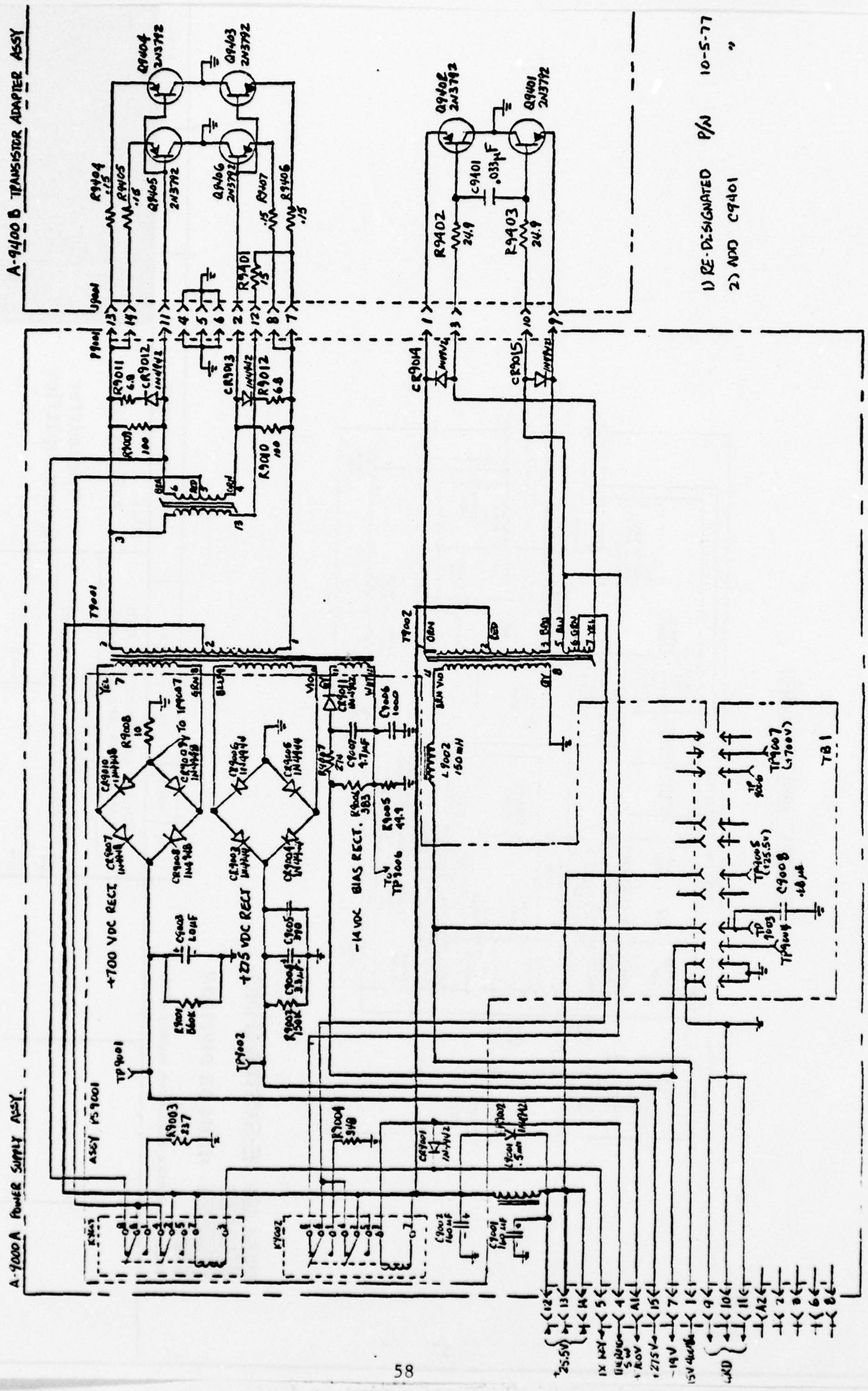
[redacted]

MATERIAL

FINISH

SCALE | SHEET NO. OF | SIZE A | REV.

SIZE A | REV.


A-9000A POWER SUPPLY ASSY.
A-9400B TRANSISTOR ADAPTER ASSY
+700 VDC RECT
+275 VDC RECT
-14 VDC BIAS RECT.
TB1
1) RE-DESIGNATED P/N 10-5-77
2) ADD C9401

APPENDIX B

AN/VRC-12 PIP
PRINTED CIRCUIT BOARD LAYOUTS

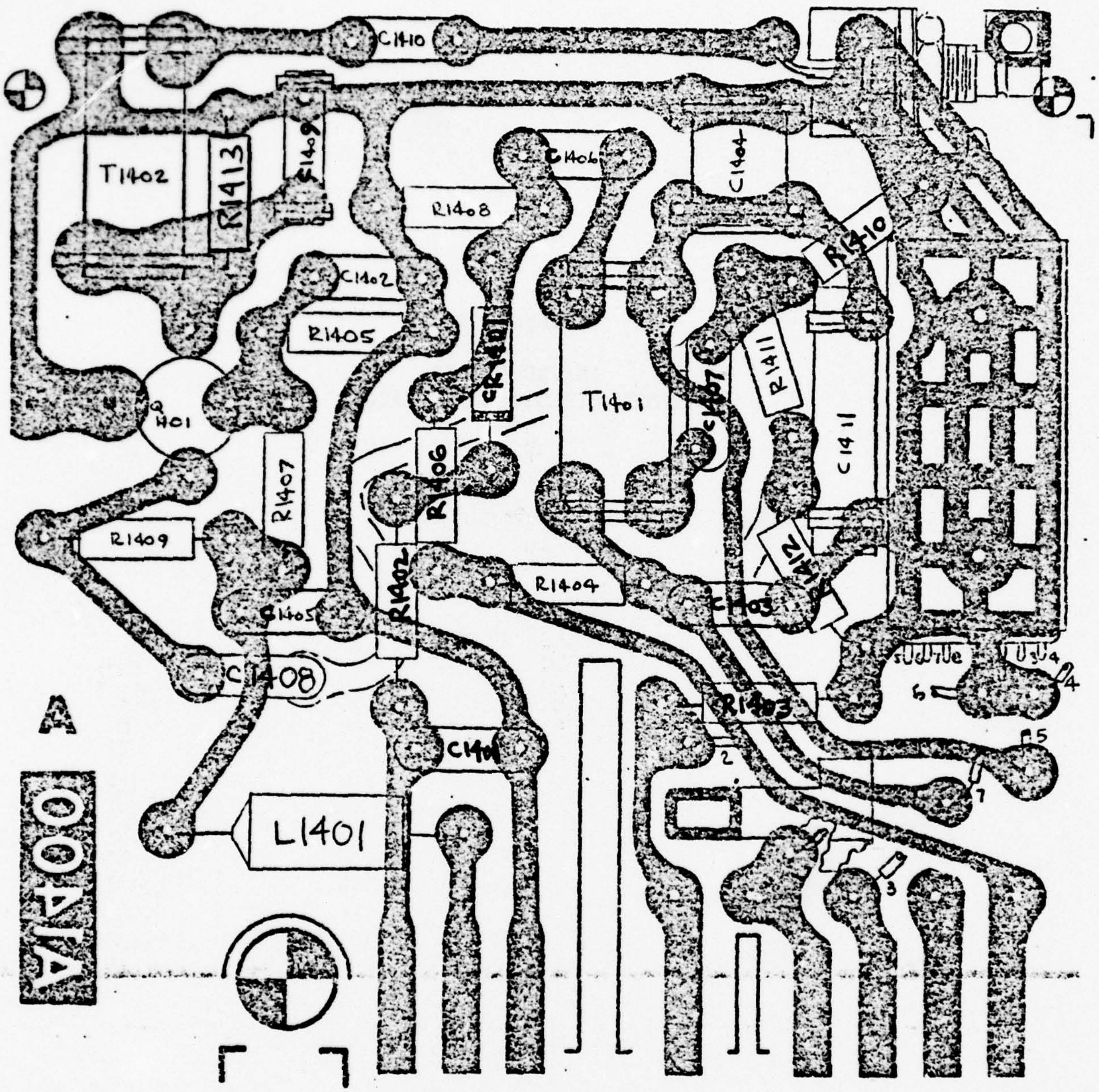


FIGURE B-1. P.C. BOARD LAYOUT FOR THE A1400A RECEIVER MIXER AND BUFFER AMPLIFIER ASSEMBLY

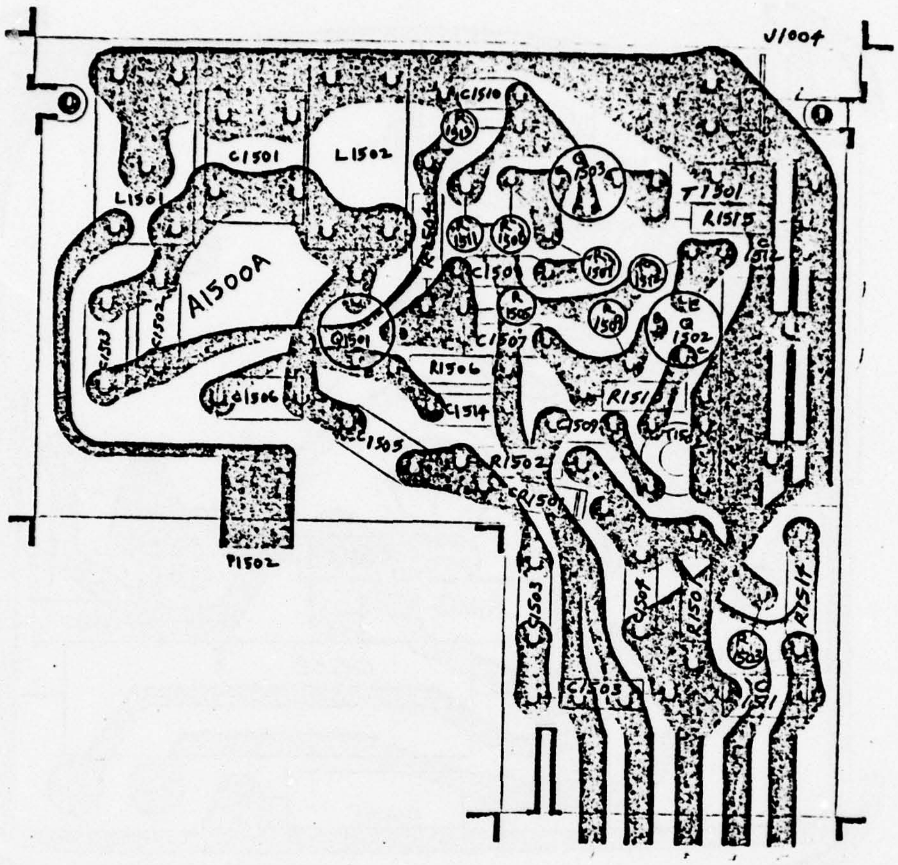


FIGURE B-2. P.C. BOARD LAYOUT FOR THE A1500A LOCAL OSCILLATOR AND BUFFER AMPLIFIERS ASSEMBLY

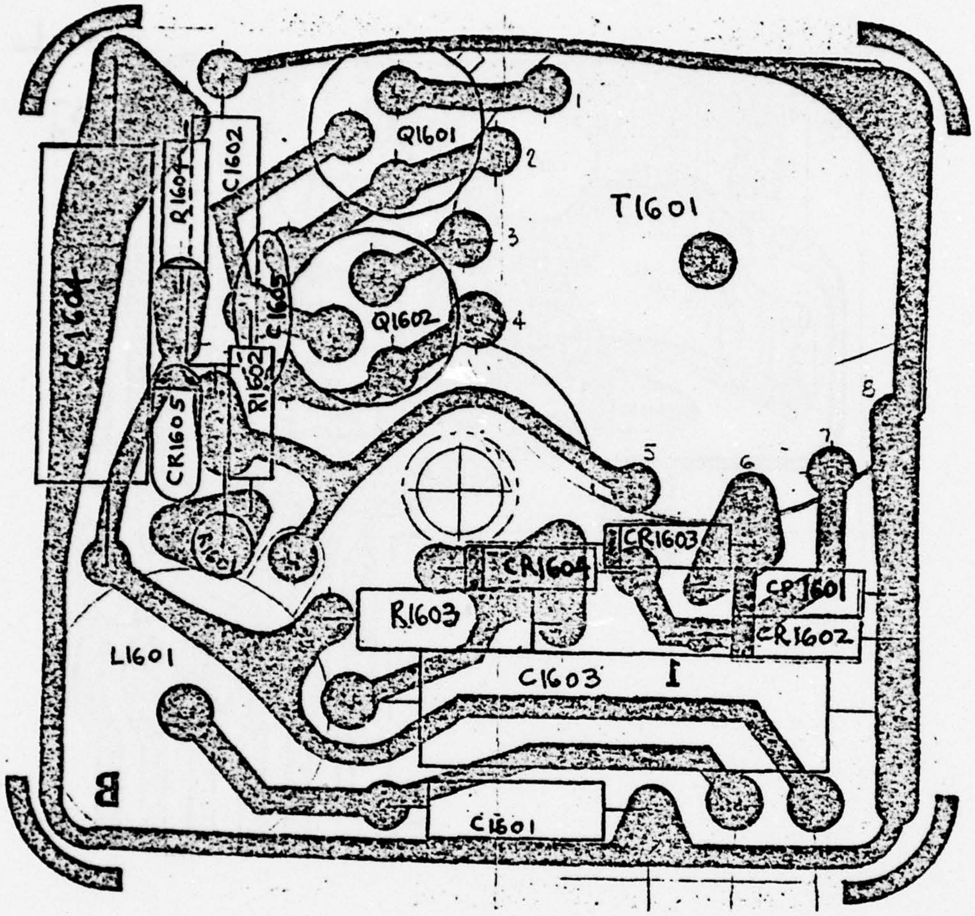
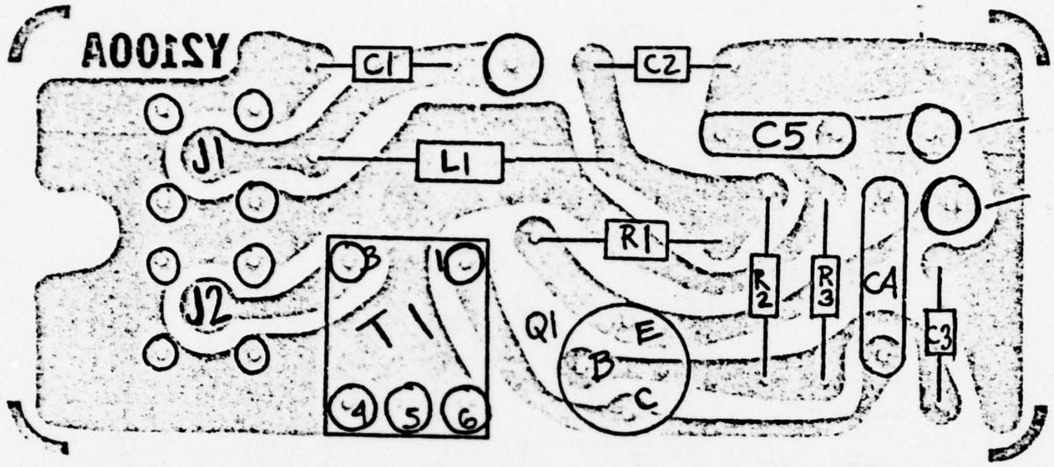
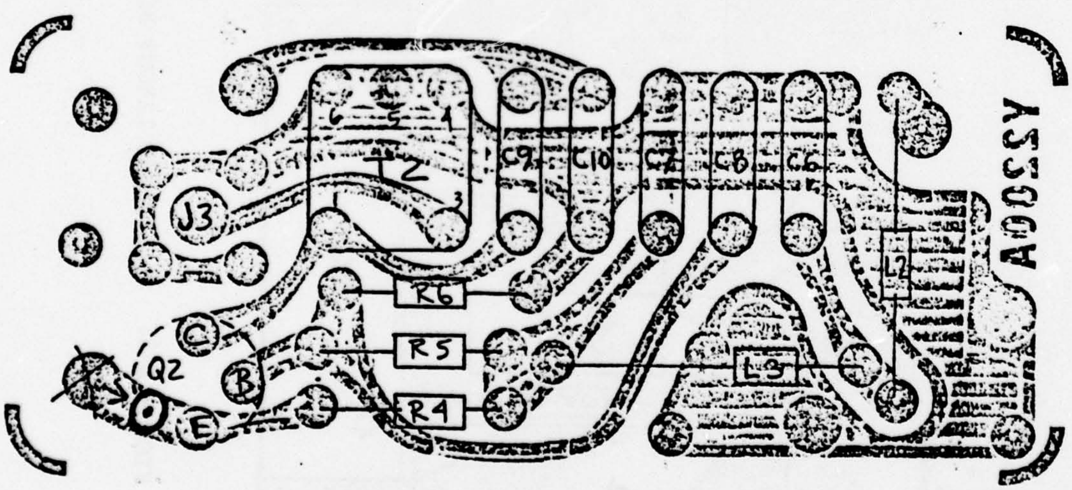


FIGURE B-3. P.C. BOARD LAYOUT FOR A1600A VHF TUNER POWER SUPPLY ASSEMBLY



A. INTERPOLATION OSCILLATOR



B. REFERENCE OSCILLATOR

FIGURE B-4. P.C. BOARD LAYOUT FOR THE A2000A CRYSTAL SWITCH

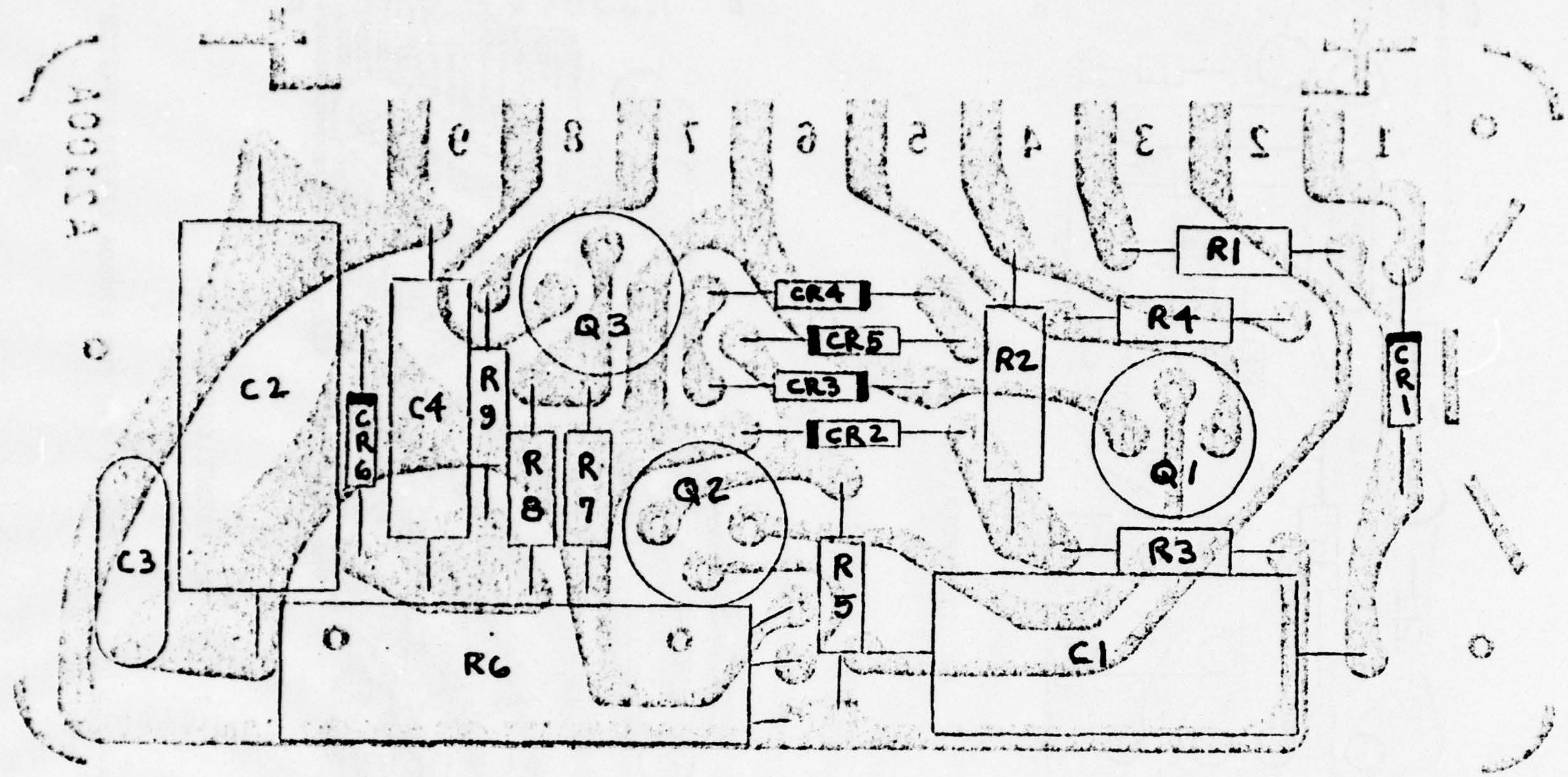


FIGURE B-5. P.C. BOARD LAYOUT FOR THE A2100A VOLTAGE REGULATOR ASSEMBLY

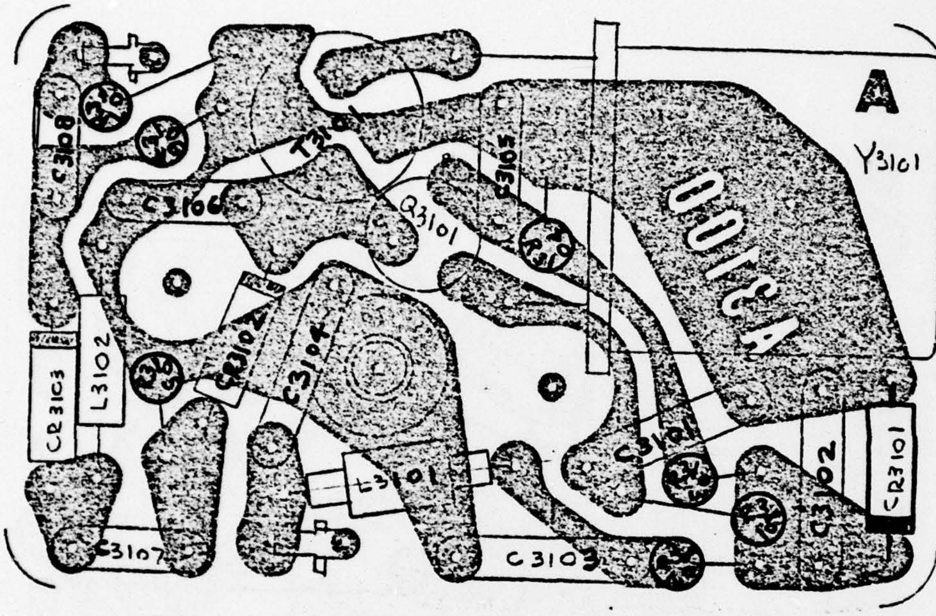


FIGURE B-6. P.C. BOARD LAYOUT FOR THE A3100A CRS HARMONIC GENERATOR ASSEMBLY

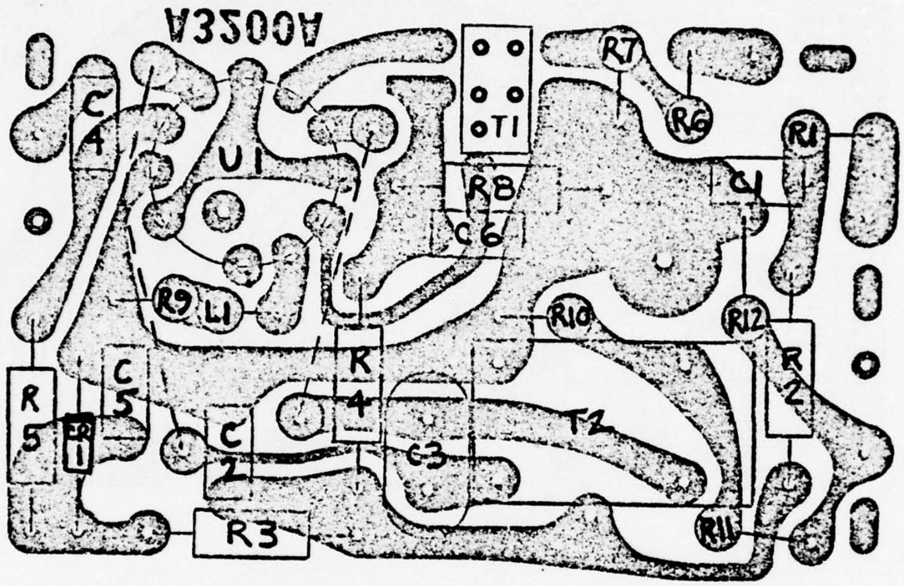


FIGURE B-7. P.C. BOARD LAYOUT FOR THE A3200A CRS BALANCED MIXER ASSEMBLY

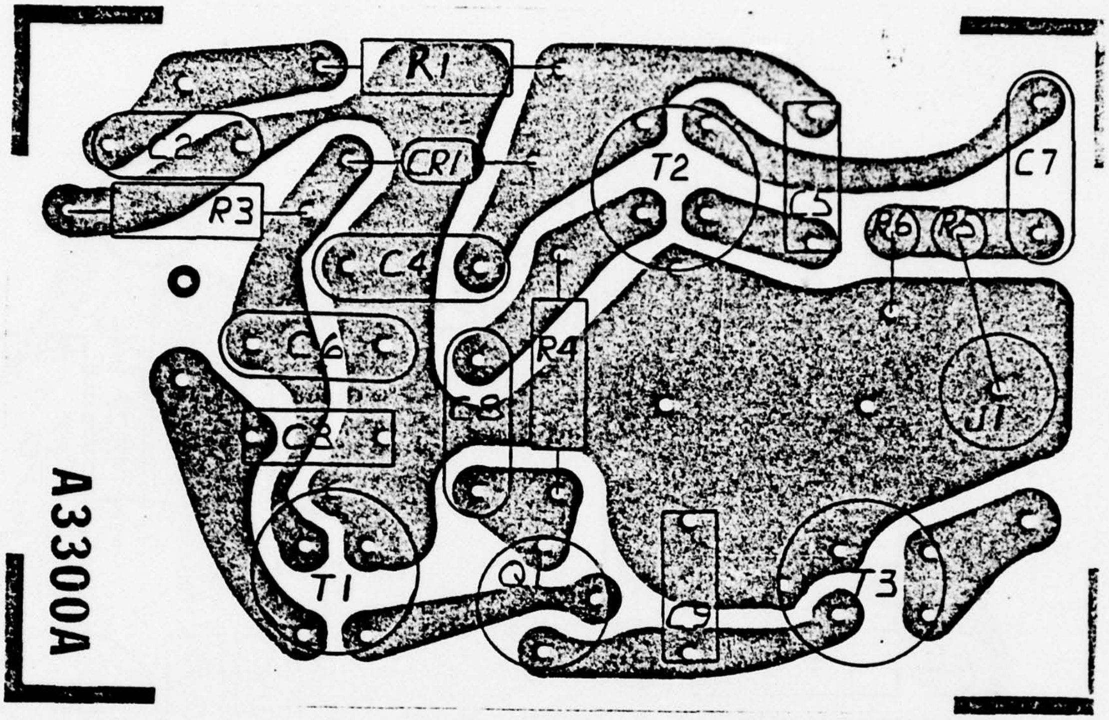


FIGURE B-8. P.C. BOARD LAYOUT FOR THE A3300A CRS SECOND MIXER ASSEMBLY

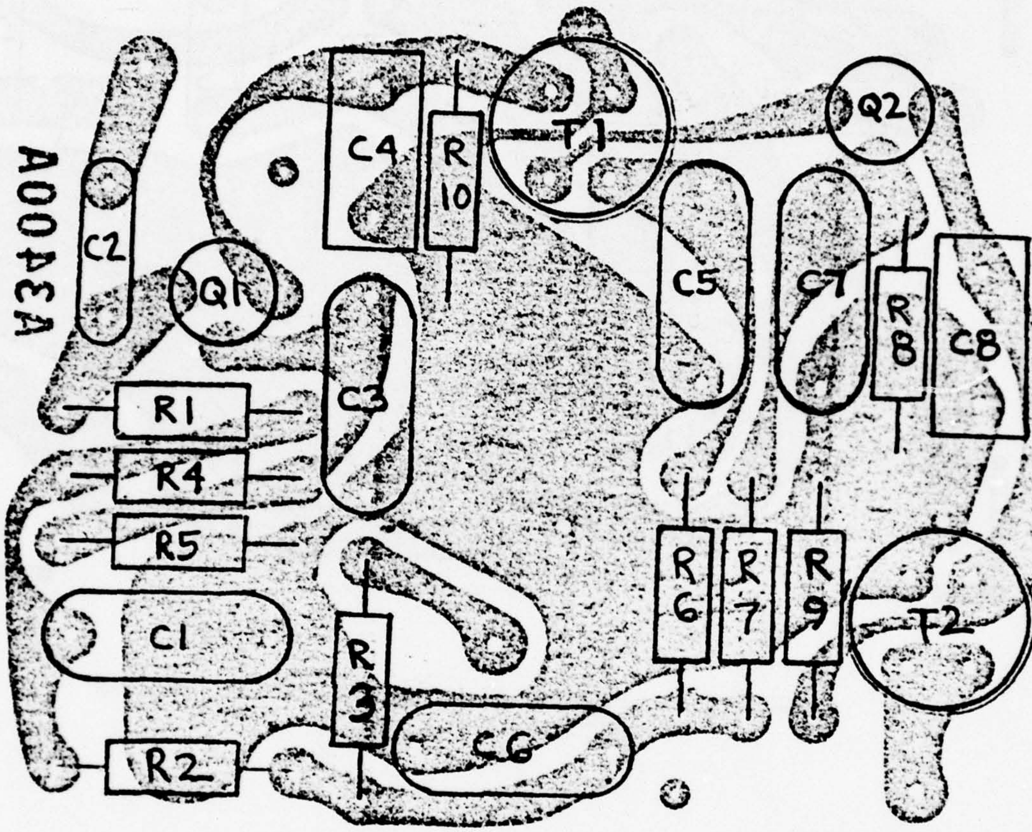


FIGURE B-9. P.C. BOARD LAYOUT FOR THE A3400A CRS FIRST AND SECOND IF AMPLIFIER ASSEMBLY

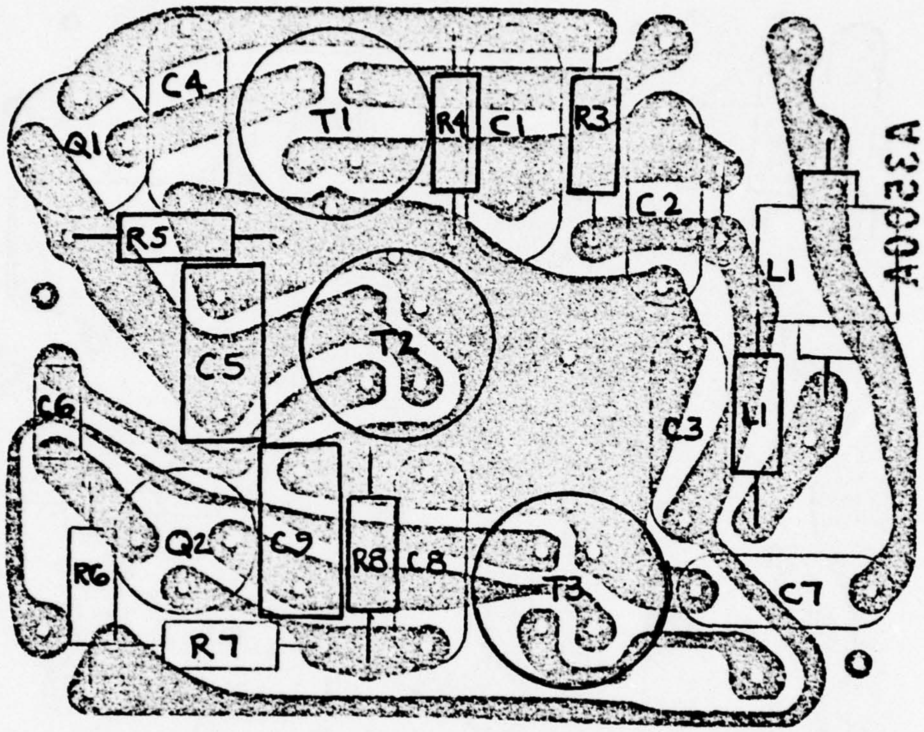


FIGURE B-10. P.C. BOARD LAYOUT FOR THE A3500A CRS THIRD IF AMPLIFIER AND LIMITER ASSEMBLY

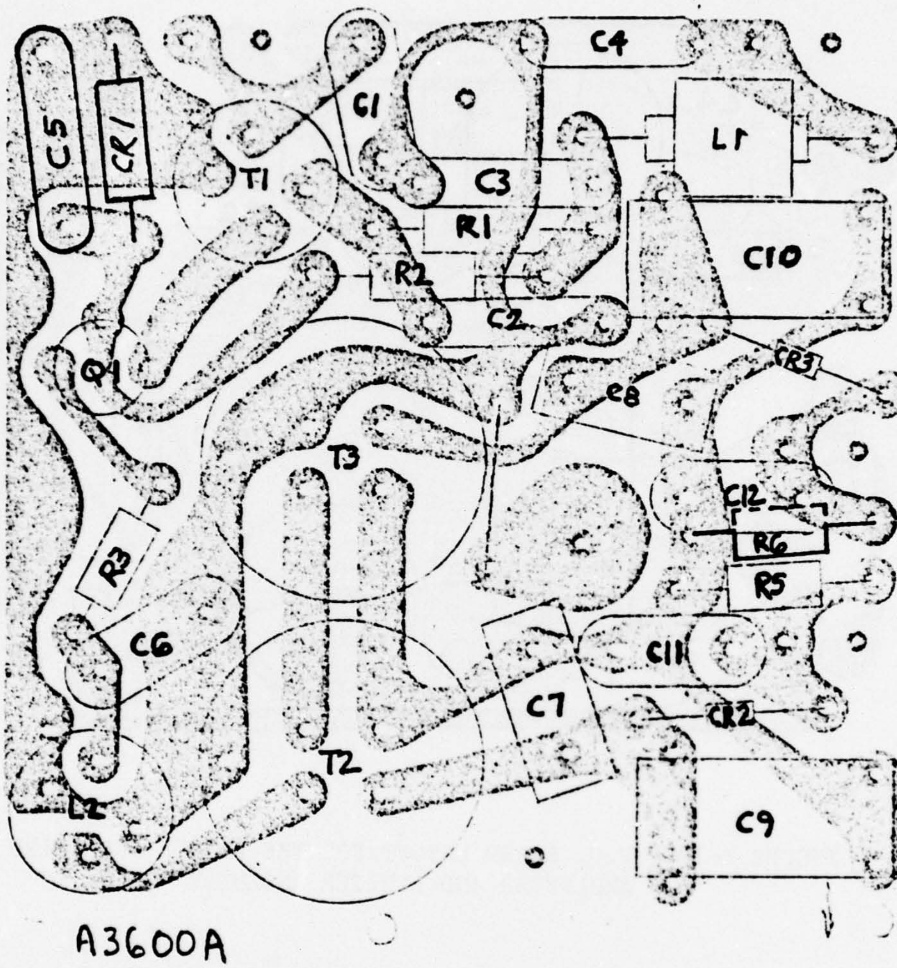


FIGURE B-11. P.C. BOARD LAYOUT FOR THE A3600A CRS HUNT DISCRIMINATOR ASSEMBLY

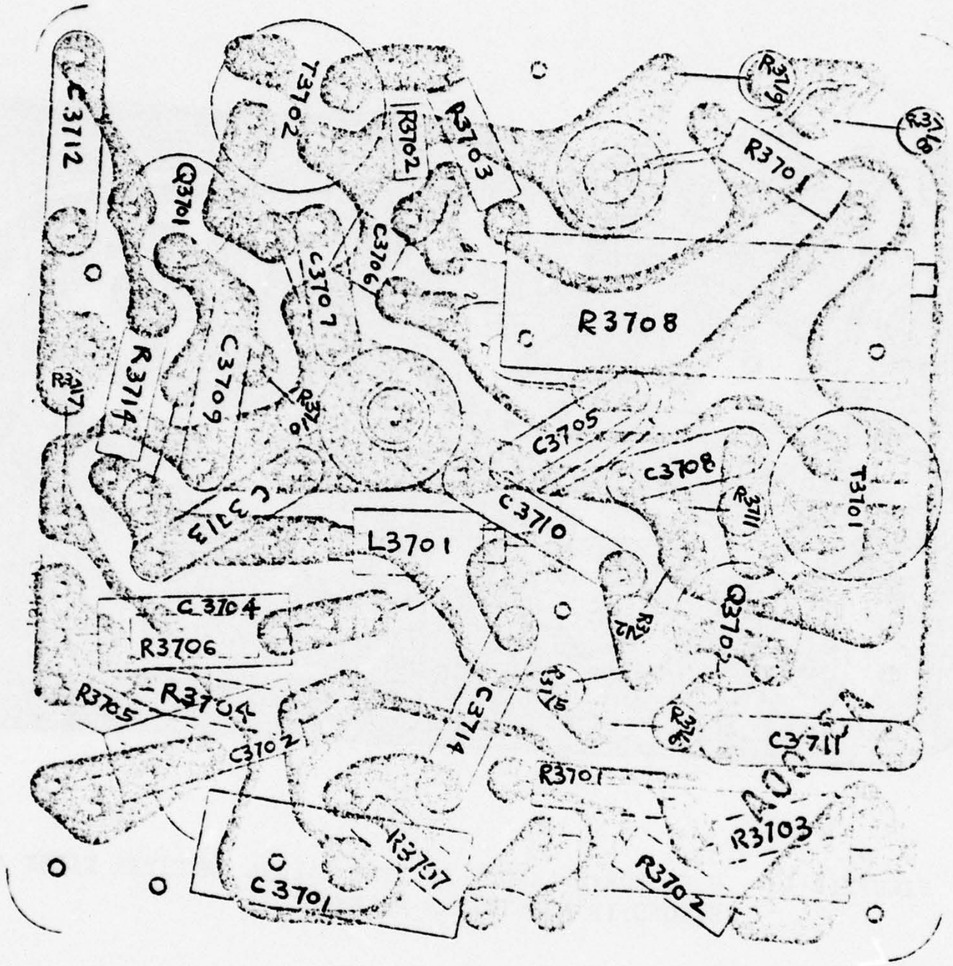


FIGURE B-12. P.C. BOARD LAYOUT FOR THE A3700A CRS PHASE DISCRIMINATOR ASSEMBLY

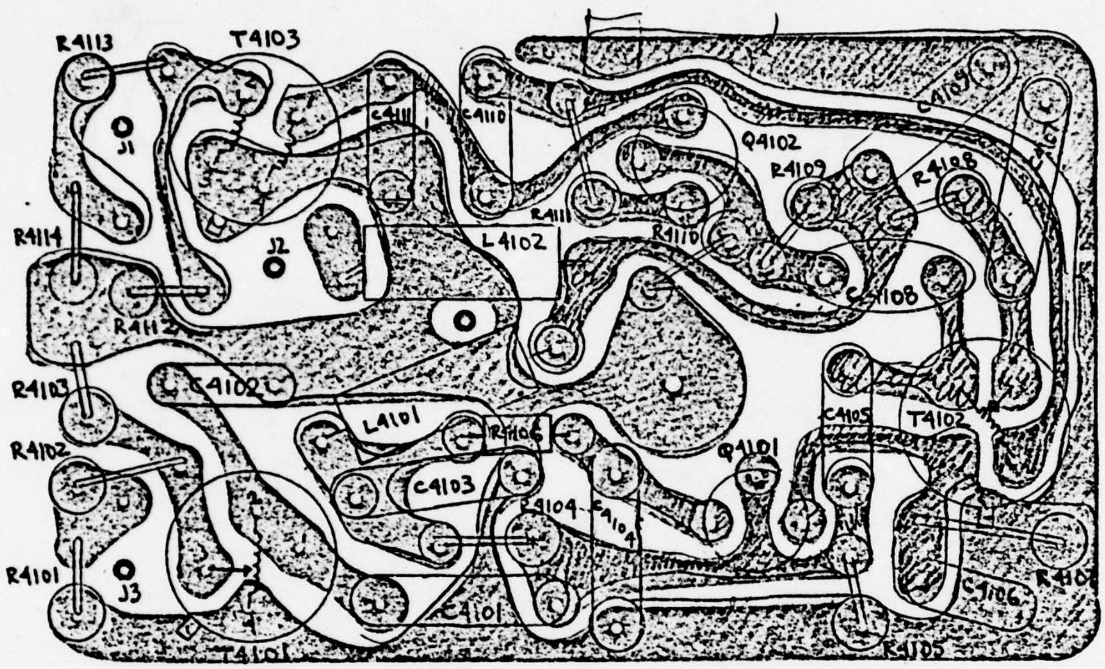


FIGURE B-13. P.C. BOARD LAYOUT FOR THE A4100A RECEIVER FIRST AND SECOND IF AMPLIFIERS ASSEMBLY

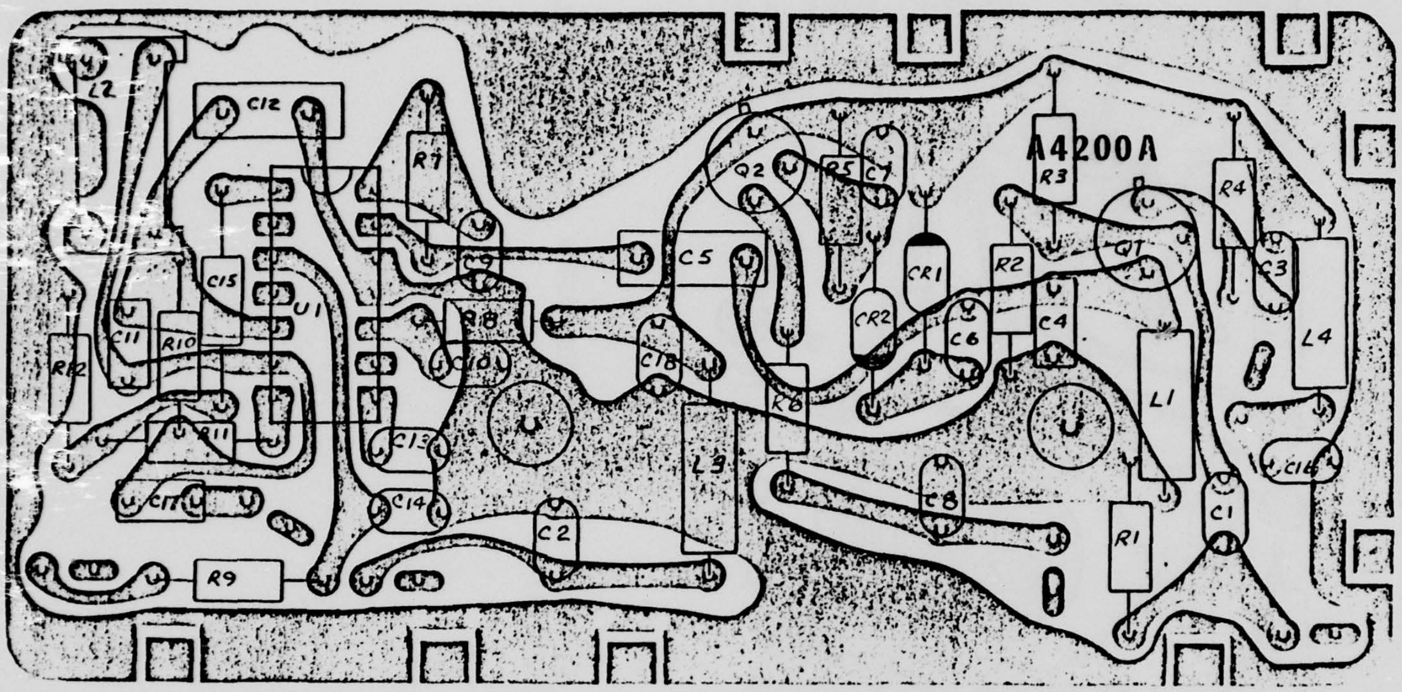


FIGURE B-14. P.C. BOARD LAYOUT FOR THE A4200A RECEIVER THIRD, FOURTH, AND FIFTH IF AMPLIFIERS, LIMITER AND DISCRIMINATOR ASSEMBLY

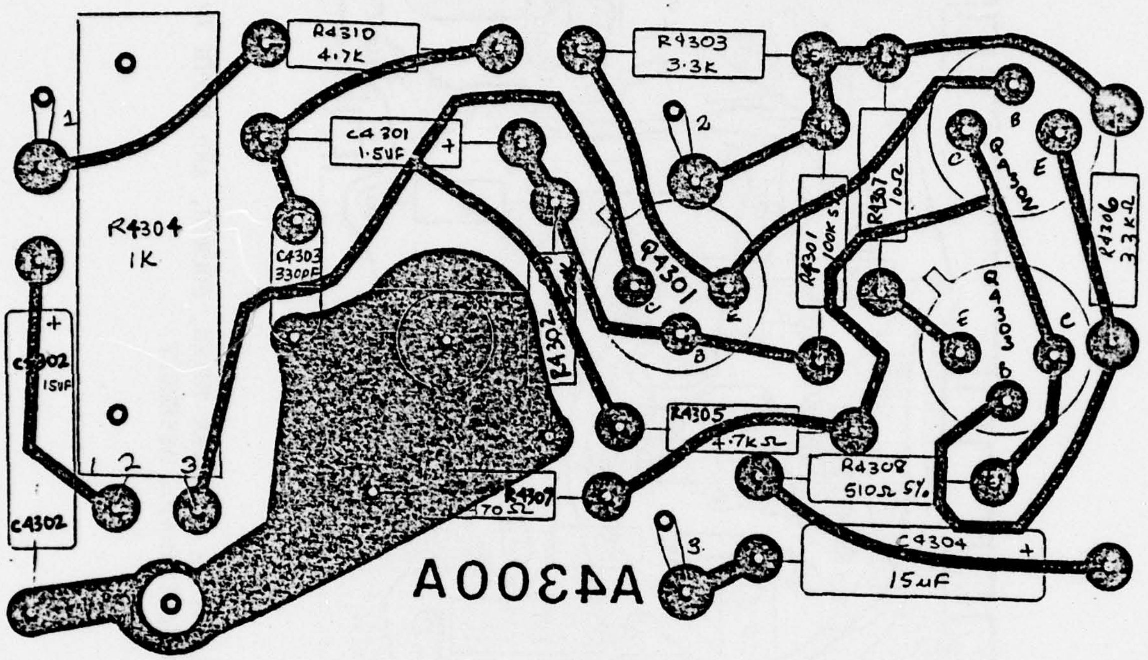


FIGURE B-15. P.C. BOARD LAYOUT FOR THE A4300A AUDIO AND SQUELCH PREAMPLIFIER ASSEMBLY

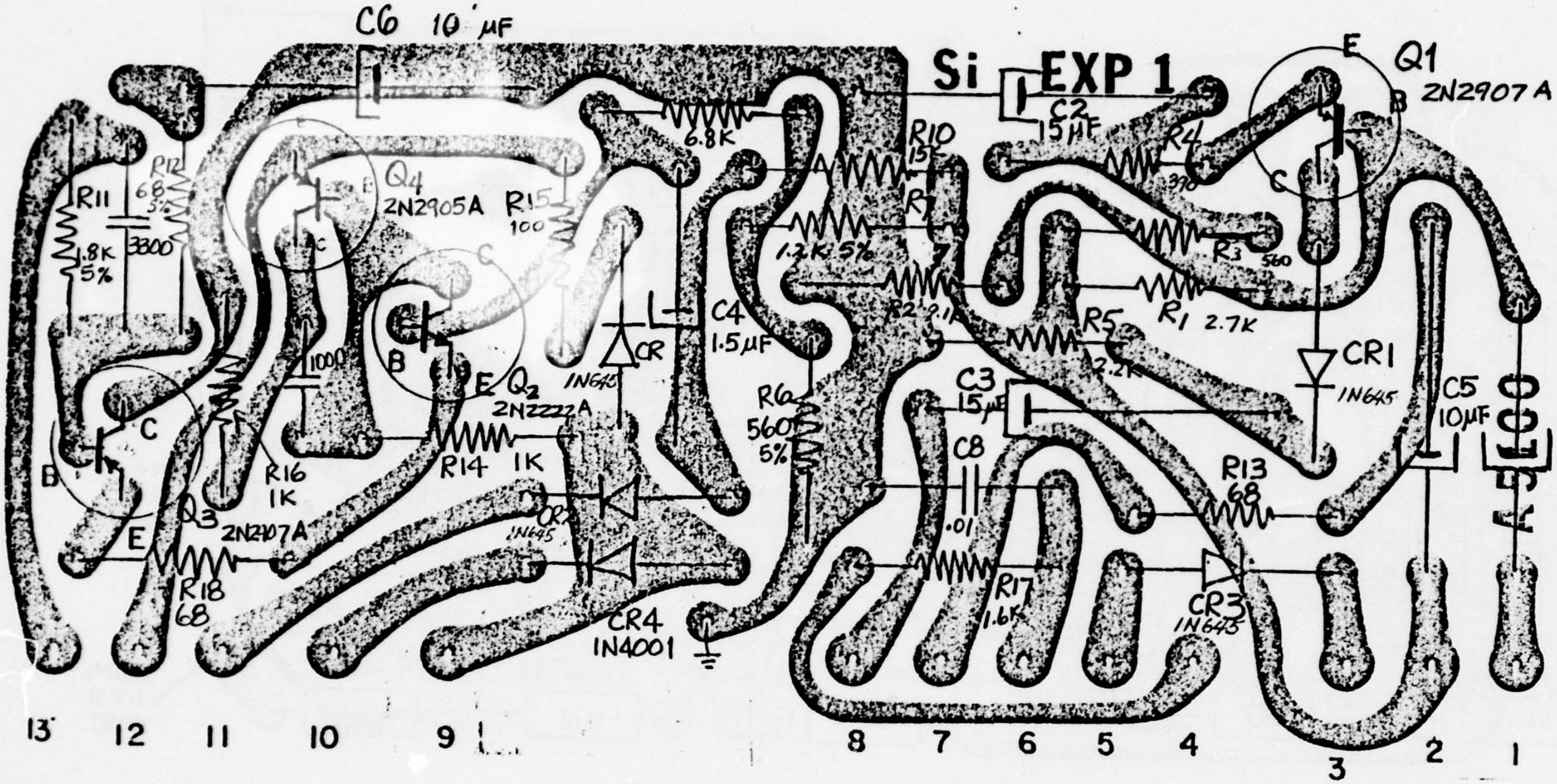


FIGURE B-16. P.C. BOARD LAYOUT FOR THE A5100A AUDIO AMPLIFIER ASSEMBLY

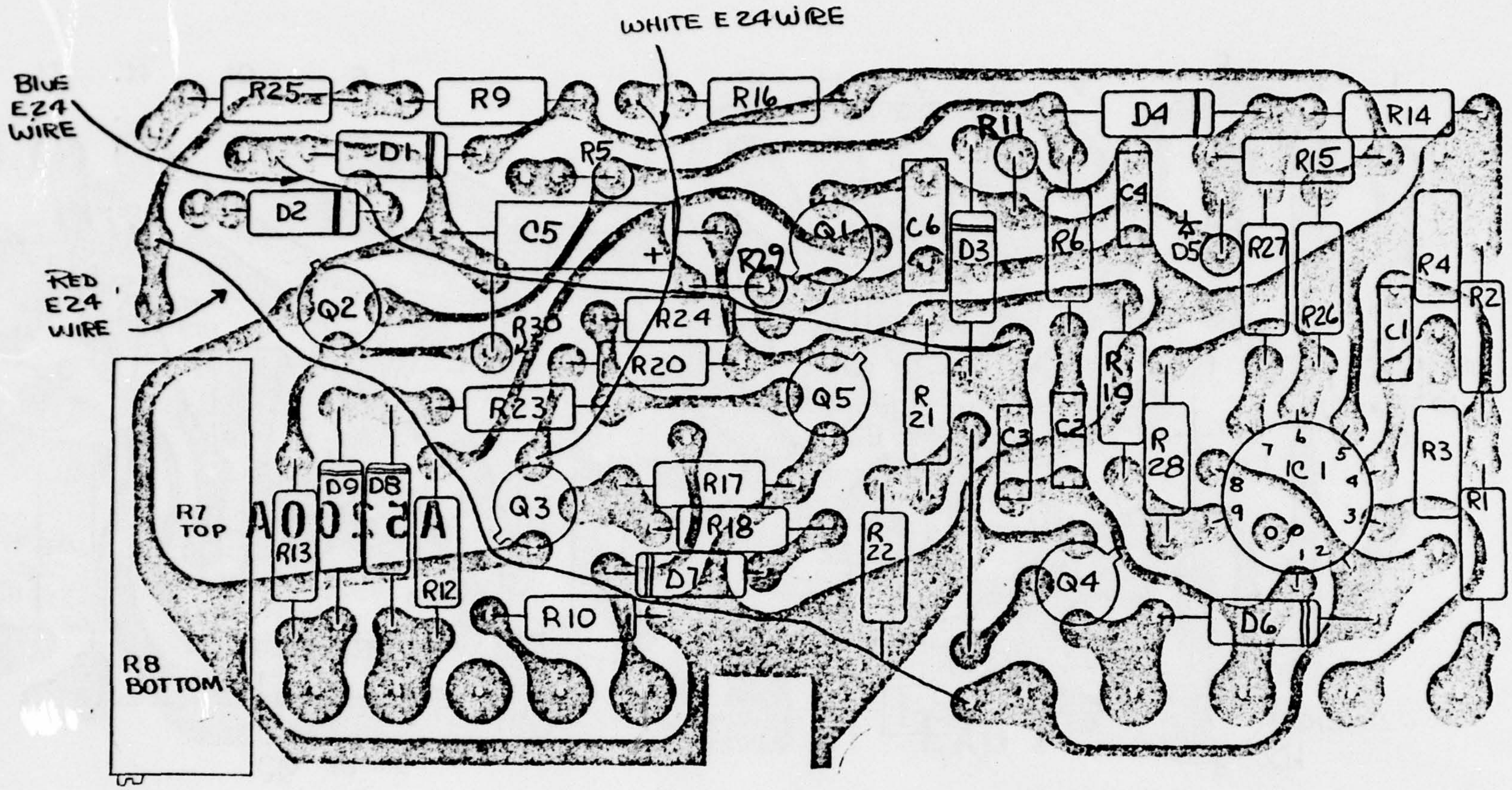


FIGURE B-17. P.C. BOARD LAYOUT FOR THE A5200A RECEIVER SQUELCH AMPLIFIER ASSEMBLY

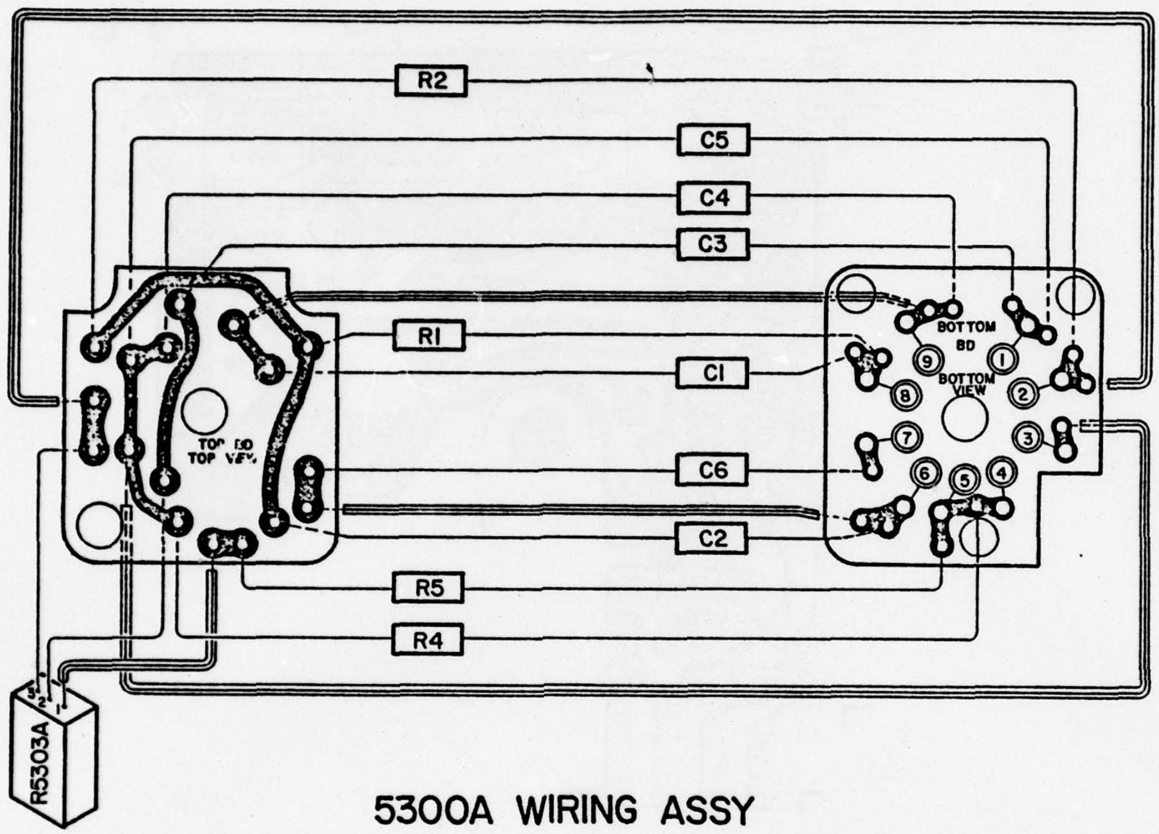


FIGURE B-18. P.C. BOARD LAYOUT FOR THE A5300A SQUELCH FILTER ASSEMBLY

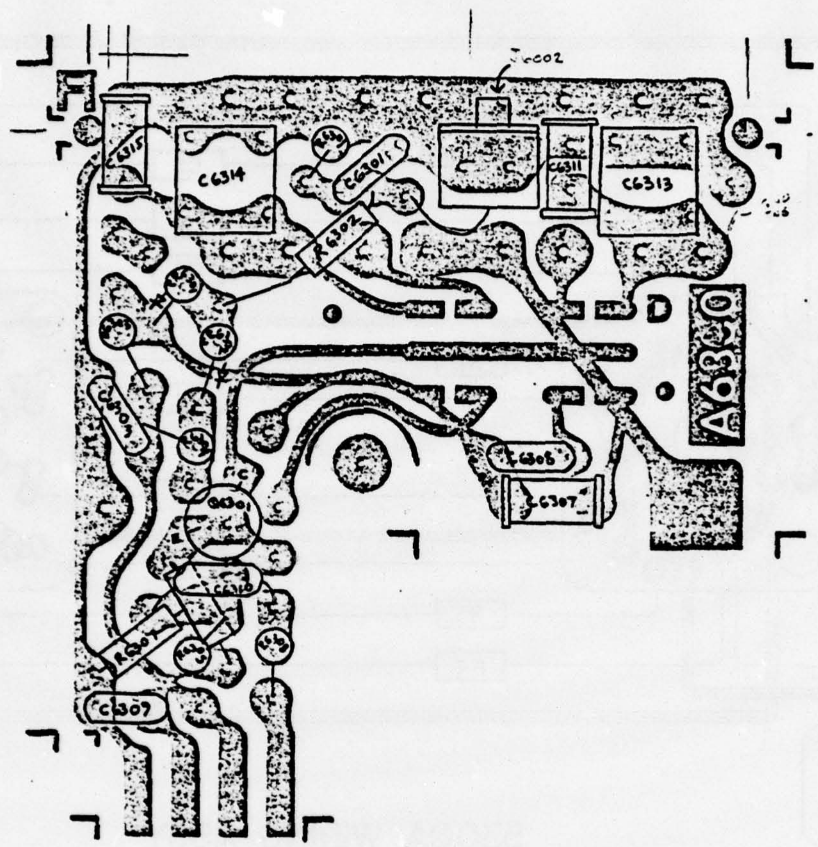


FIGURE B-19.1. P.C. BOARD LAYOUT FOR THE A6300A TRANSMITTER MASTER OSCILLATOR ASSEMBLY (FRONT SIDE)

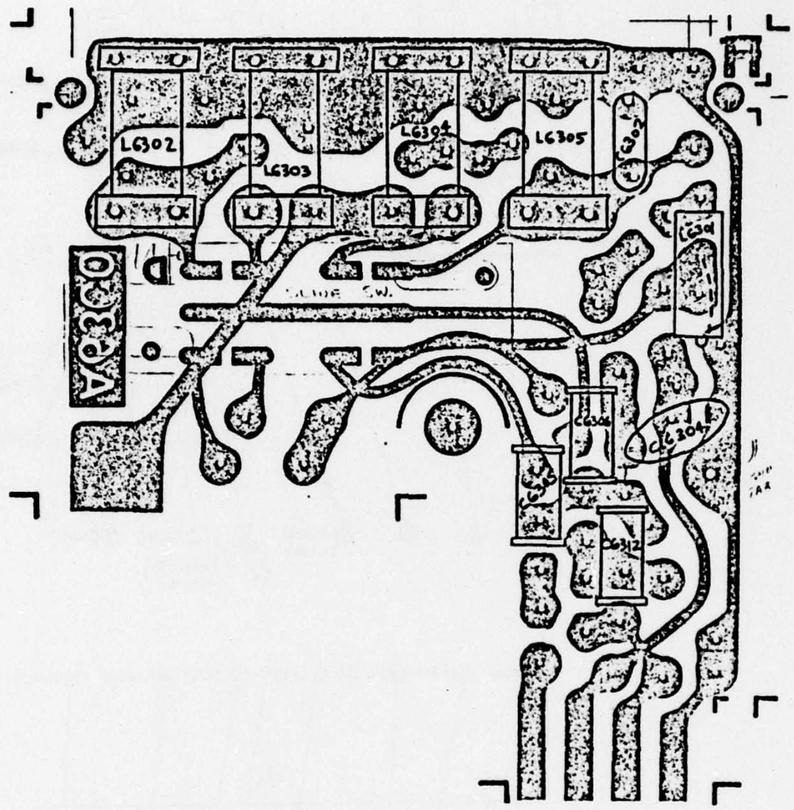


FIGURE B-19.2. P.C. BOARD LAYOUT FOR THE A6300A TRANSMITTER MASTER OSCILLATOR ASSEMBLY (BACK SIDE)

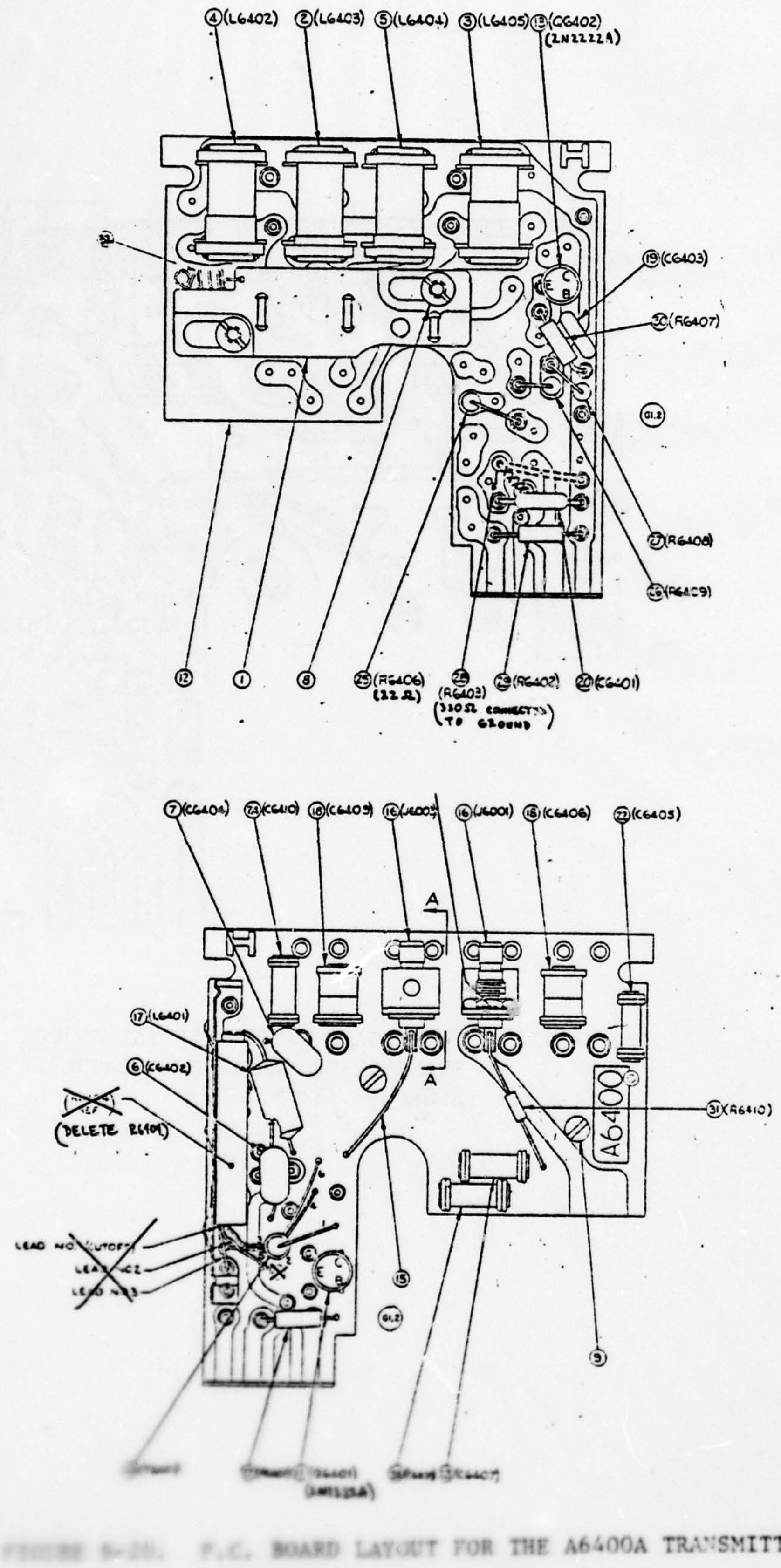


FIGURE 8-20. P.C. BOARD LAYOUT FOR THE A6400A TRANSMITTER BUFFER AMPLIFIER ASSEMBLY

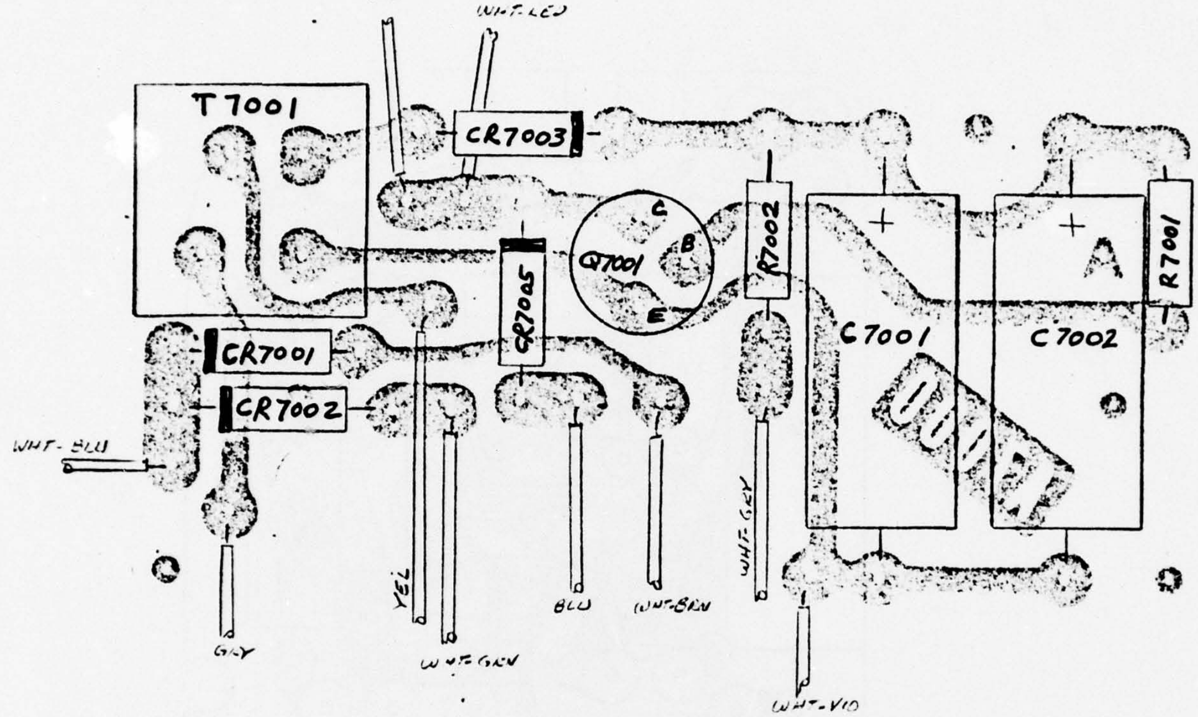


FIGURE B-21. P.C. BOARD LAYOUT FOR THE A7000A NULL SWITCH ASSEMBLY

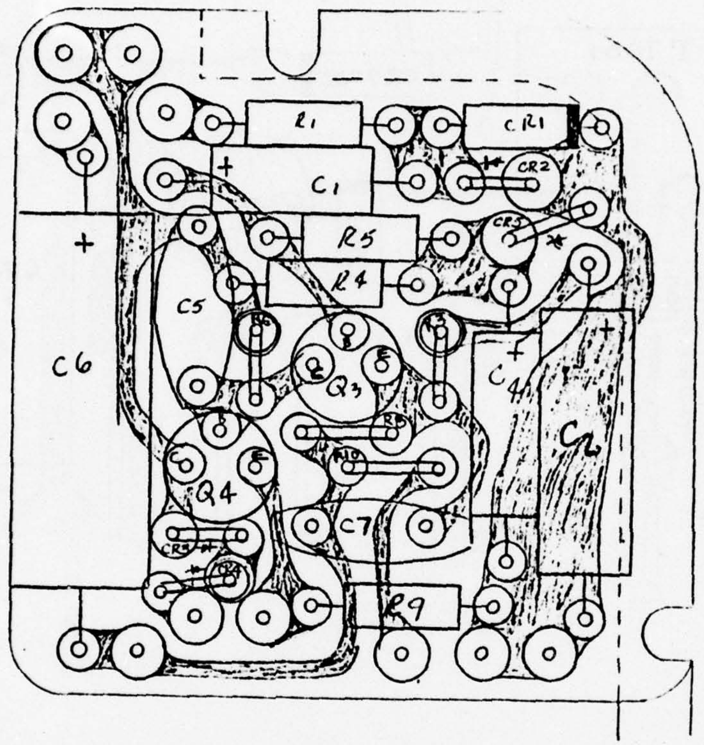


FIGURE B-22. P.C. BOARD LAYOUT FOR THE A7200A SERVO AMPLIFIER ASSEMBLY

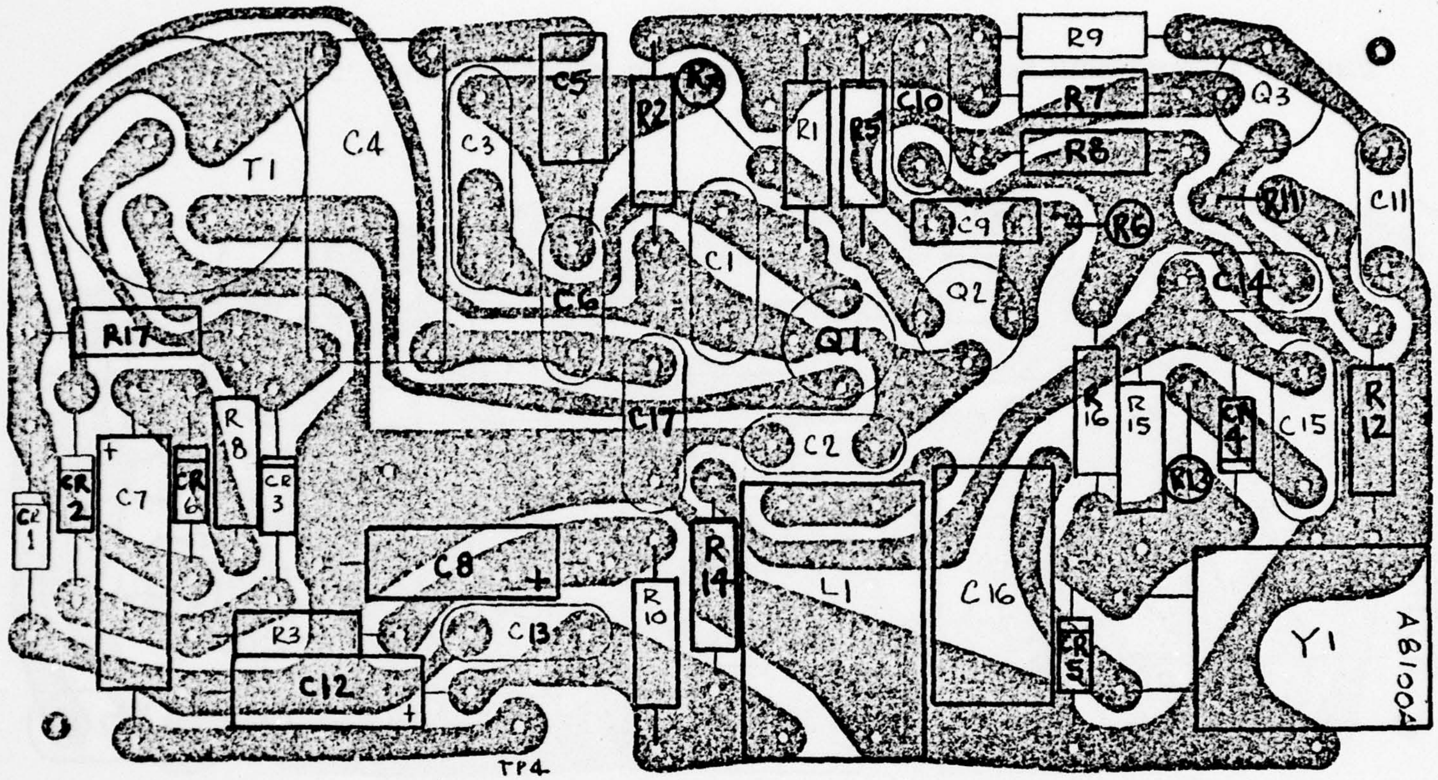


FIGURE B-23. P.C. BOARD LAYOUT FOR THE A8100A TRANSMITTER 11.5 MHZ MODULATOR ASSEMBLY

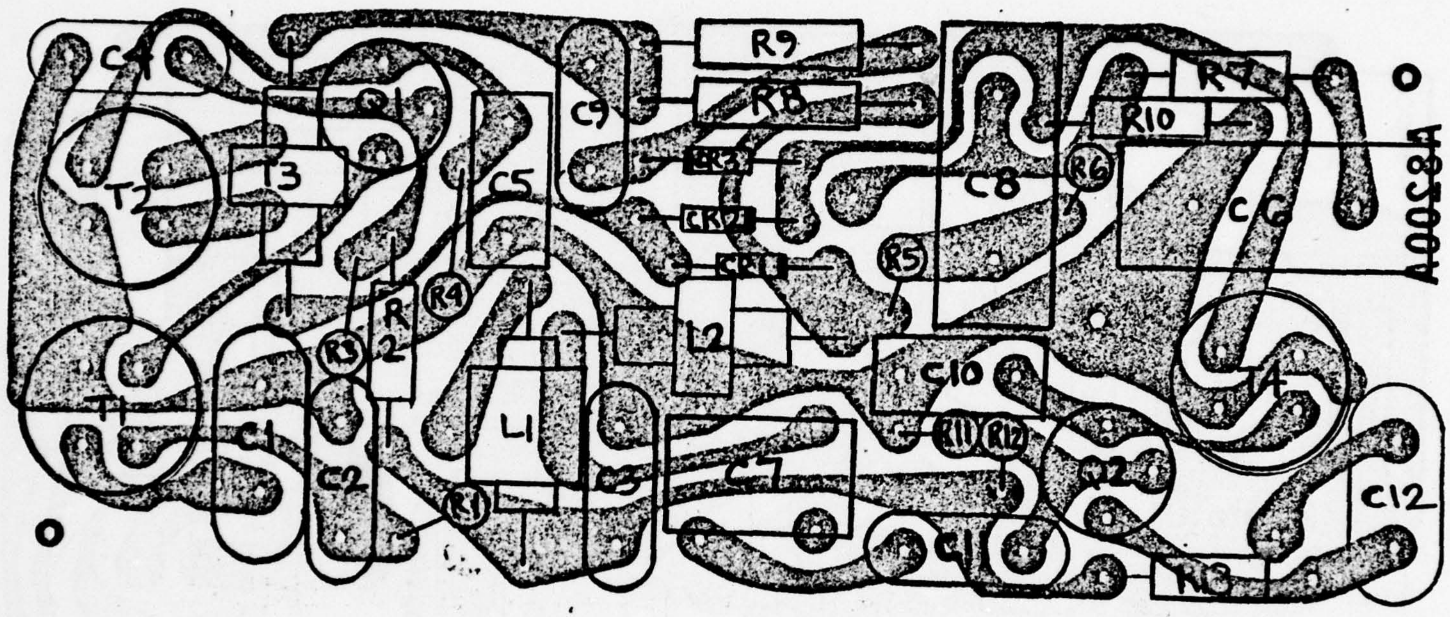


FIGURE B-24. P.C. BOARD LAYOUT FOR THE A8200A TRANSMITTER PHASE DISCRIMINATOR ASSEMBLY

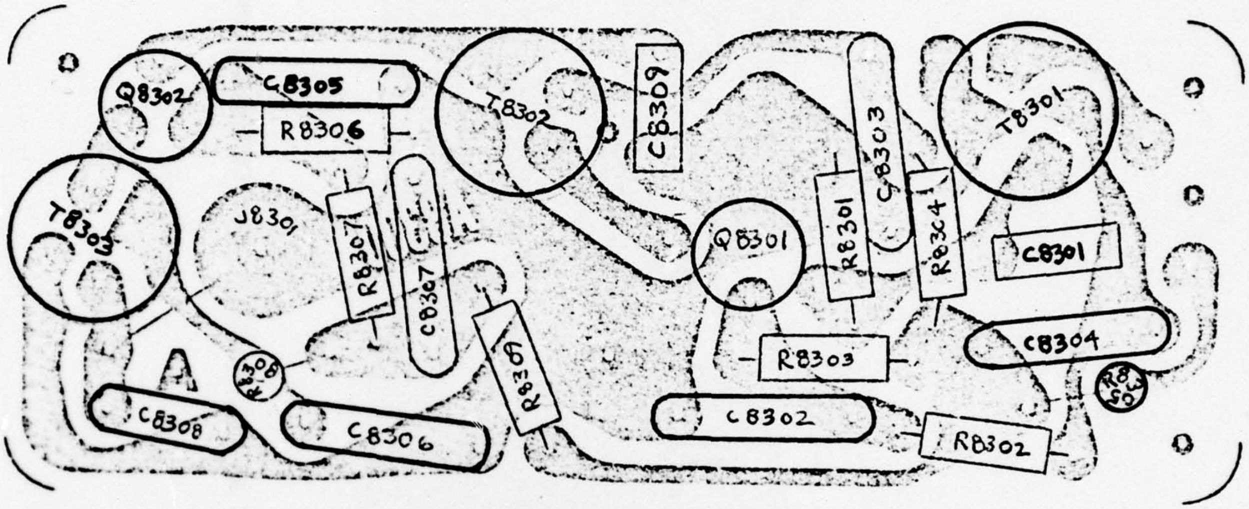


FIGURE B-25. P.C. BOARD LAYOUT FOR THE A8300A TRANSMITTER FIRST AND SECOND IF AMPLIFIER ASSEMBLY

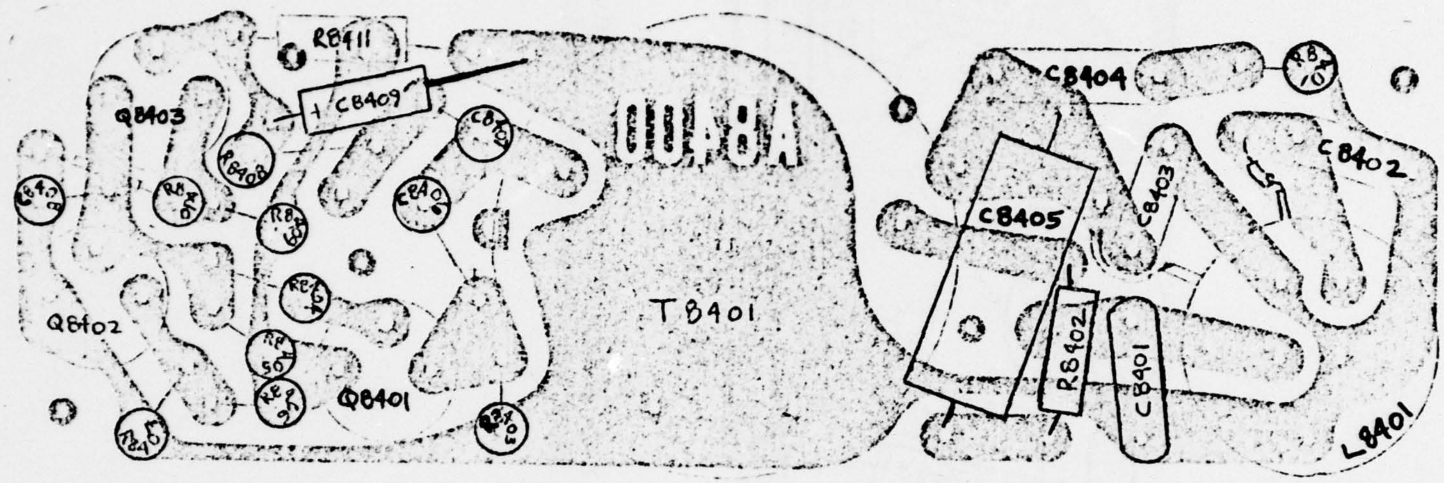


FIGURE B-26. P.C. BOARD LAYOUT FOR THE A8400A TRANSMIT HUNT GENERATOR ASSEMBLY

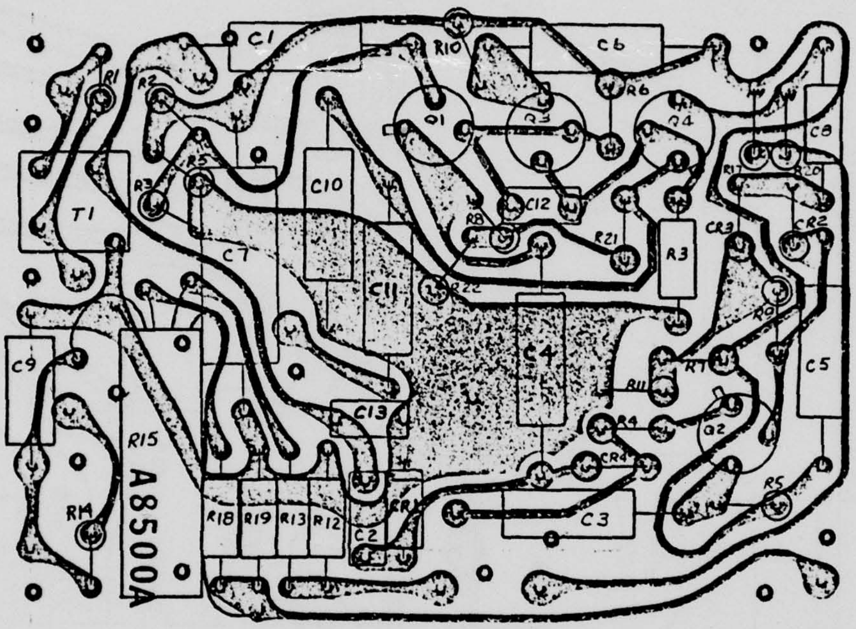


FIGURE B-27. P.C. BOARD LAYOUT FOR THE A8500A TRANSMITTER SPEECH AMPLIFIER ASSEMBLY

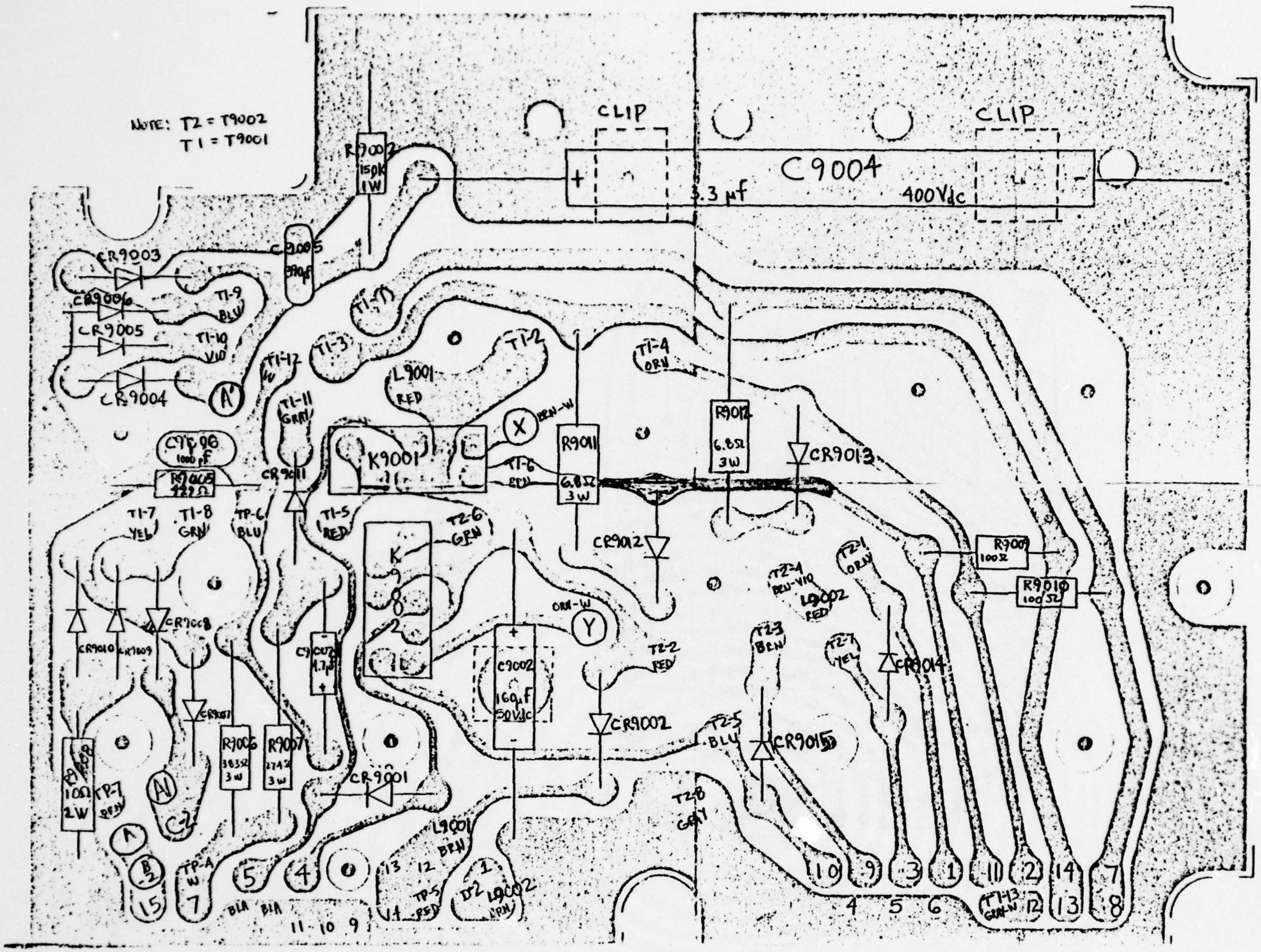


FIGURE B-28.1. P.C. BOARD LAYOUT FOR THE A9000A POWER SUPPLY ASSEMBLY (BOARD 1)

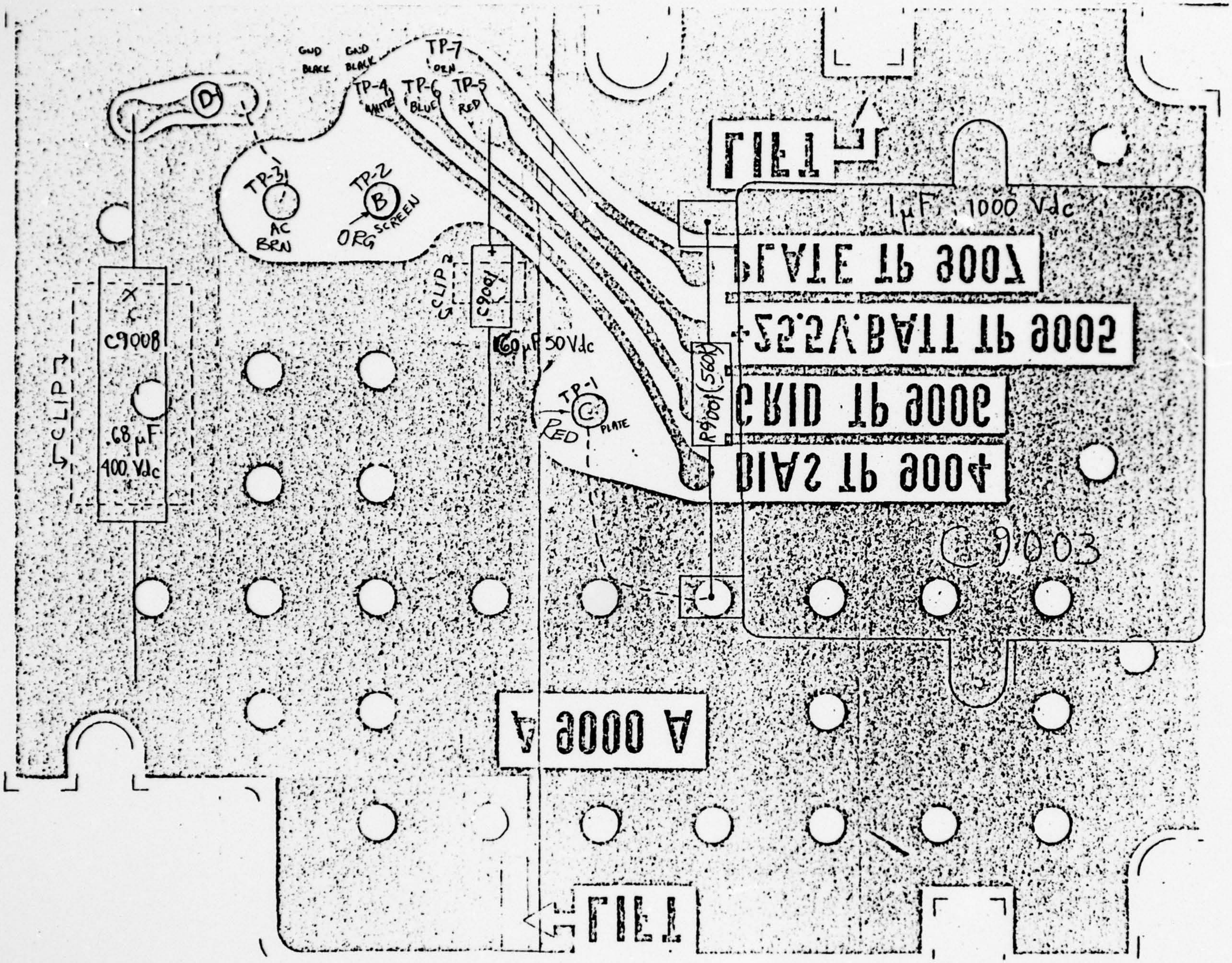


FIGURE B-28.2. P.C. BOARD LAYOUT FOR THE A9000A POWER SUPPLY ASSEMBLY (BOARD 2)

APPENDIX C

AN/VRC-12 PIP
LISTS OF MATERIALS

LIST OF MATERIAL

MODULE: A-1400A

REF.	PART NO.	DESCRIPTION
C1	SM-C-374834-2	Capacitor, .0047 μF
C2	SM-C-374834-2	Capacitor, .0047 μF
C3	SM-C-374834-2	Capacitor, .0047 μF
C4	PC41J4R5	Capacitor, 0.8-4.5 pF
C5	SM-C-374834-2	Capacitor, .0047 μF
C6	SM-C-374834-2	Capacitor, .0047 μF
C7	SM-C-374834-2	Capacitor, .0047 μF
C8	SM-C-374834-2	Capacitor, .0047 μF
C9	CC20CH040C	Capacitor, 4 pF
C10	SM-C-374834-2	Capacitor, .0047 μF
C11	SM-C-374835-5	Capacitor, 1.0 pF
CR1	JAN1N4148	Diode
Q1	2N3251A	Transistor
R1	RC07GF301J	Resistor, 300Ω
R2	RC07GF201J	Resistor, 200Ω
R3	RC07GF471J	Resistor, 470Ω
R4	RC07GF152J	Resistor, 1500Ω
R5	RC07GF392J	Resistor, 3900Ω
R6	RC07GF473J	Resistor, 47kΩ
R7	RC07GF392J	Resistor, 3900Ω
R8	RC07GF274J	Resistor, 270kΩ
R9	RC07GF392J	Resistor, 3900Ω
R10	RC07GF301J	Resistor, 300Ω
R11	RC07GF180J	Resistor, 18Ω
R12	RC07GF301J	Resistor, 300Ω
R13	RC07GF273J	Resistor, 27kΩ
T1	SM-C-416328	Transformer
T2	SM-C-416329	Transformer
V1	JAN6205	Tube

LIST OF MATERIAL

MODULE: A-1500A

REF.	PART NO.	DESCRIPTION
C1	PC41J4R5	Capacitor, 0.8-4.5 pF
C2	SM-C-374835-3	Capacitor, 3 pF
C3	SM-C-416360-8	Capacitor, 510 pF, 2%
C4	SM-C-416360-2	Capacitor, 510 pF, 10%
C5	CC20CH180G	Capacitor, 18 pF
C6	CC20CH050C	Capacitor, 5 pF
C7	M39014-01-1368	Capacitor, 22 pF
C8	SM-C-374834-1	Capacitor, .001 μF
C9	SM-C-374834-1	Capacitor, .001 μF
C10	SM-C-374834-1	Capacitor, .001 μF
C11	CC20CH180G	Capacitor, 18 pF
C12	SM-C-374834-1	Capacitor, .001 μF
C13	SM-C-374835-1	Capacitor, 1 pF N750
C14	CMR05C020D0DL	Capacitor, 2 pF
CR1	SM-B-416386	Diode, Varactor 1N3552
L1	SM-C-416321-1	Coil
L2	SM-C-416310	Coil
L3	SM-C-374824-1	Coil
Q1	2N3251A	Transistor
Q2	2N3251A	Transistor
Q3	2N3251A	Transistor
R1	RC07GF273J	Resistor, 27kΩ
R2	RC07GF223J	Resistor, 22kΩ
R3	RC07GF682J	Resistor, 6.8kΩ
R4	RC07GF104J	Resistor, 10kΩ
R5	RC07GF472J	Resistor, 4.7kΩ
R6	RC07GF821J	Resistor, 820Ω
R7	RC07GF121J	Resistor, 120Ω
R8	RC07GF821J	Resistor, 820Ω
R9	RC07GF182J	Resistor, 1.8kΩ
R10	RC07GF332J	Resistor, 3.3kΩ
R11	RC07GF152J	Resistor, 1.5kΩ
R12	RC07GF102J	Resistor, 1.0kΩ
R13	RC07GF332J	Resistor, 3.3kΩ
R14	RC07GF223J	Resistor, 22kΩ
R15	RC07GF222J	Resistor, 2.2kΩ
T1	SK-416387	Transformer
T2	SK-416385	Transformer

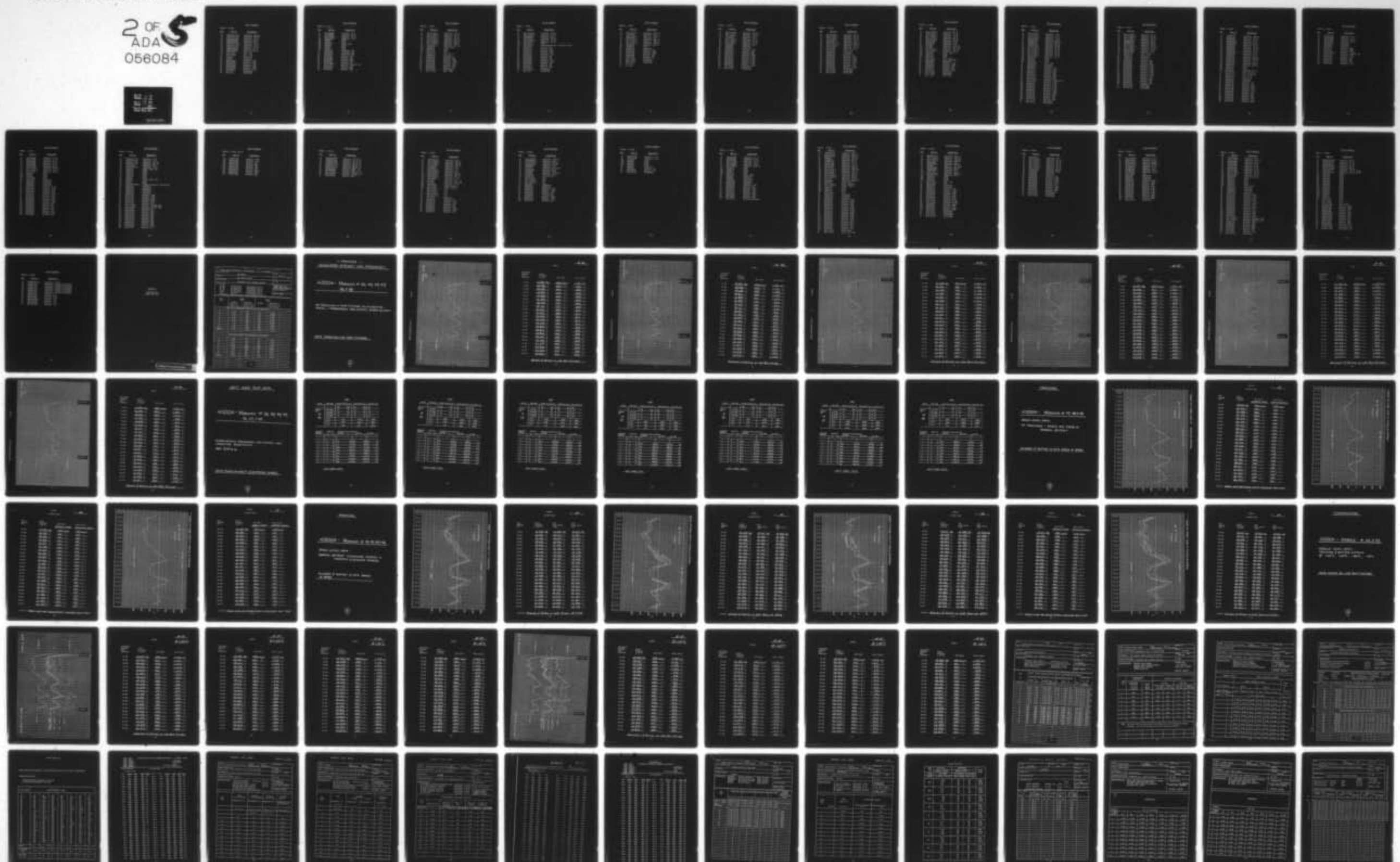
<u>LIST OF MATERIAL</u>

MODULE: A-1600A

REF.	PART NO.	DESCRIPTION
C1	SM-B-416409	Capacitor, 6.8 µF
C2	SM-B-416409	Capacitor, 6.8 µF
C3	CL31BQ020MPE	Capacitor, 2.0 µF
C4	CL31BQ020MPE	Capacitor, 2.0 µF
CR1	JAN1N645	Diode
CR2	JAN1N645	Diode
CR3	JAN1N645	Diode
CR4	JAN1N645	Diode
CR5	JAN1N645	Diode
L1	SM-C-416323	Coil
Q1	2N5681	Transistor
Q2	2N5681	Transistor
R1	RC07GF822J	Resistor, 8.2kΩ
R2	RC07GF222J	Resistor, 2.2kΩ
R3	RC20GF561J	Resistor, 560Ω
R4	RC07GF104K	Resistor, 100kΩ
T1	SM-C-416326	Transformer

AD-A056 084 E-SYSTEMS INC HUNTINGTON IN MEMCOR DIV F/G 17/2.1
AN/VRC-12, 43-49 SERIES RADIO SET SILICONIZATION PRODUCT IMPROV--ETC(U)
MAY 78 K P YELTON DAAB07-76-C-0135
UNCLASSIFIED CORADCOM-76-C-0135-F NL

2 OF 5
ADA
056084



LIST OF MATERIAL

MODULE: A-2000A

REF.	PART NO.	DESCRIPTION
C1	M39014/01-1450	Capacitor, 4700 pF
C2	M39014/01-1450	Capacitor, 4700 pF
C3	M39014/01-1456	Capacitor, .01 μF
C4	CMR05E300J0DM	Capacitor, 30 pF
C5	CMR05E680J0DM	Capacitor, 68 pF
C6	M39014/01-1456	Capacitor, .01 μF
C7	M39014/01-1456	Capacitor, .01 μF
C8	M39014/01-1456	Capacitor, .01 μF
C9	CMR05E620FPDM	Capacitor, 62 pF
C10	CMR06F511J0DM	Capacitor, 510 pF
L1	SM-C-413577	Coil, 1 mh
L2	SM-C-413577	Coil, 1 mh
L3	SM-C-413577	Coil, 1 mh
Q1	2N3251A	Transistor
Q2	2N3251A	Transistor
R1	RCR07GF222K	Resistor, 2.2kΩ
R2	RCR07GF392K	Resistor, 3.9kΩ
R3	RCR07GF682K	Resistor, 6.8kΩ
R4	RCR07GF222K	Resistor, 2.2kΩ
R5	RCR07GF392K	Resistor, 3.9kΩ
R6	RCR07GF682K	Resistor, 6.8kΩ
T1	SK-414452	Transformer
T2	SK-414461	Transformer

LIST OF MATERIAL

MODULE: A-2100A

REF.	PART NO.	DESCRIPTION
C1	CSR13E686MM	Capacitor, 68 μF
C2	CSR13E686MM	Capacitor, 68 μF
C3	SM-C-413567-4	Capacitor, .01 μF
C4	CSR13E156MM	Capacitor, 15 μF
CR1	JAN1N645	Diode
CR2	JAN1N645	Diode
CR3	JAN1N752A	Diode, Zener
CR4	JAN1N645	Diode
CR5	JAN1N645	Diode
CR6	JAN1N645	Diode
Q1	JAN2N2905A	Transistor, PNP
Q2	JAN2N2222A	Transistor, NPN
Q3	JAN2N2905A	Transistor, PNP
R1	RC07GF271K	Resistor, 270Ω
R2	RC20GF102K	Resistor, 1kΩ
R3	RC07GF681K	Resistor, 680Ω
R4	RC07GF101K	Resistor, 100Ω
R5	RC07GF102K	Resistor, 1kΩ
R6	SM-C-374830-5	Resistor, Variable, 5kΩ
R7	RC07GF153K	Resistor, 15kΩ
R8	RC07GF153K	Resistor, 15kΩ
R9	RC07GF681K	Resistor, 680Ω

LIST OF MATERIAL

MODULE: A-3100A

REF.	PART NO.	DESCRIPTION
C1	SM-C-413567-1	Capacitor, .001 μF
C2	SM-C-413567-4	Capacitor, .01 μF
C3	SM-C-413567-4	Capacitor, .01 μF
C4	SM-C-413567-4	Capacitor, .01 μF
C5	SM-C-413567-3	Capacitor, .0047 μF
C6	SM-D-413568-18	Capacitor, 160 pF
C7	SM-C-413567-1	Capacitor, .001 μF
C8	SM-C-413567-1	Capacitor, .001 μF
CR1	JAN1N965B	Diode, Zener
CR2	JAN1N4148	Diode
CR3	JAN1N4148	Diode
L1	SM-C-413577	Coil
L2	MS18130-24	Coil, 22 μH
Q1	JAN2N2907A	Transistor
R1	RC07GF102K	Resistor, 1kΩ
R2	RC07GF561K	Resistor, 560Ω
R3	RC07GF332K	Resistor, 3.3kΩ
R4	RC07GF682K	Resistor, 6.8kΩ
R5	RC07GF123K	Resistor, 12kΩ
R6	RC07GF153K	Resistor, 15kΩ
R7	RC07GF102K	Resistor, 1kΩ
T1	SM-D-413582	Transformer
Y1	SM-C-413570	XTAL, 1 MHz

LIST OF MATERIAL

MODULE: A-3200A

REF.	PART NO.	DESCRIPTION
C1	SM-C-413567-4	Capacitor, .01 μF
C2	SM-C-413567-4	Capacitor, .01 μF
C3	CM04ED240G03	Capacitor, 24 pF
C4	CK05BX102M	Capacitor, .001 μF
C5	SM-C-413567-4	Capacitor, .01 μF
C6	SM-C-413567-4	Capacitor, .01 μF
CR1	JAN1N4148	Diode
IC1	SM-A-104220	Integrated Circuit, Transistor Array
L1	MS75084-05	Coil, 2.7 μH
R1	RC07GF471J	Resistor, 470Ω
R2	RC07GF471J	Resistor, 470Ω
R3	RC07GF333J	Resistor, 33kΩ
R4	RC07GF272J	Resistor, 2.7kΩ
R5	RC07GF102J	Resistor, 1kΩ
R6	RC07GF390J	Resistor, 39Ω
R7	RC07GF100J	Resistor, 10Ω
R8	RC07GF122J	Resistor, 1.2kΩ
R9	RC07GF820J	Resistor, 82Ω
R10	RC07GF102J	Resistor, 1kΩ
R11	RC07GF102J	Resistor, 1kΩ
R12	RC07GF102J	Resistor, 1kΩ
T1	SM-A-595916-1	Transformer
T2	SK-621285	Transformer

LIST OF MATERIAL

MODULE: A-3300A

REF.	PART NO.	DESCRIPTION
C2	SM-C-413567-2	Capacitor, .0033 μF
C3	CC20CH120J	Capacitor, 12 pF
C4	SM-C-413567-2	Capacitor, .0033 μF
C5	CC20CK04ROC	Capacitor, 4 pF
C6	SM-C-413567-2	Capacitor, .0033 μF
C7	SM-C-413567-1	Capacitor, .001 μF
C8	SM-C-413567-2	Capacitor, .0033 μF
C9	CC20RH200G	Capacitor, 20 pF
CR1	JAN1N4148	Diode
Q1	JAN2N3251A	Transistor
R1	RC07GF821K	Resistor, 820Ω
R3	RC07GF472K	Resistor, 4.7kΩ
R4	RC07GF101K	Resistor, 100Ω
R5	RC07GF330K	Resistor, 33Ω
R6	RC07GF330K	Resistor, 33Ω
T1	SM-D-413623	Transformer
T2	SM-D-413625	Transformer
T3	SM-D-413627	Transformer
C1	Not Used	
R2	Not Used	

LIST OF MATERIAL

MODULE: A-3400A

REF.	PART NO.	DESCRIPTION
C1	SM-C-413567-4	Capacitor, .01 μF
C2	SM-C-413567-3	Capacitor, .0047 μF
C3	SM-C-413567-4	Capacitor, .01 μF
C4	CC20UJ030C	Capacitor, 3 pF
C5	SM-C-413567-4	Capacitor, .01 μF
C6	SM-C-413567-4	Capacitor, .01 μF
C7	SM-C-413567-4	Capacitor, .01 μF
C8	CC20UJ080C	Capacitor, 8 pF
Q1	JAN2N2907A	Transistor
Q2	JAN2N2907A	Transistor
R1	RC07GF272J	Resistor, 2.7kΩ
R2	RC07GF821K	Resistor, 820Ω
R3	RC07GF471K	Resistor, 470Ω
R4	RC07GF822J	Resistor, 8.2kΩ
R5	RC07GF182J	Resistor, 1.8kΩ
R6	RC07GF272J	Resistor, 2.7kΩ
R7	RC07GF562K	Resistor, 5.6kΩ
R8	RC07GF562K	Resistor, 5.6kΩ
R9	RC07GF562K	Resistor, 5.6kΩ
R10	RC07GF562K	Resistor, 5.6kΩ
T1	SM-D-413645	Transformer
T2	SM-D-413647	Transformer

LIST OF MATERIAL

MODULE: A-3500A

REF.	PART NO.	DESCRIPTION
C1	CM05FD221G03	Capacitor, 220 pF
C2	SM-C-413567-4	Capacitor, .01 μF
C3	SM-C-413567-4	Capacitor, .01 μF
C4	SM-C-413567-4	Capacitor, .01 μF
C5	CC20UJ030C	Capacitor, 3 pF
C6	M39014/01-1240	Capacitor, 1500 pF
C7	SM-C-413567-4	Capacitor, .01 μF
C8	SM-C-413567-4	Capacitor, .01 μF
C9	CC20UJ180G	Capacitor, 18 pF
L1	SM-C-413577	Coil, 1 mh
Q1	JAN2N2907A	Transistor
Q2	JAN2N2907A	Transistor
R1	RC07GF102K	Resistor, 1kΩ
R2	RC07GF182K	Resistor, 1.8kΩ
R3	RC07GF562K	Resistor, 5.6kΩ
R4	RC07GF222K	Resistor, 2.2kΩ
R5	RC07GF272K	Resistor, 2.7kΩ
R6	RC07GF102K	Resistor, 1kΩ
R7	RC07GF562K	Resistor, 5.6kΩ
R8	RC07GF332K	Resistor, 3.3kΩ
T1	SM-D-413633	Transformer
T2	SM-D-413665	Transformer
T3	SM-D-413667	Transformer

LIST OF MATERIAL

MODULE: A-3600A

REF.	PART NO.	DESCRIPTION
C1	SM-D-413568-6	Capacitor, 180 pF
C2	SM-C-413567-4	Capacitor, .01 μF
C3	SM-C-413567-4	Capacitor, .01 μF
C4	SM-C-413567-4	Capacitor, .01 μF
C5	SM-C-413567-4	Capacitor, .01 μF
C6	SM-D-413568-4	Capacitor, 150 pF
C7	CC30PH470F	Capacitor, 47 pF
C8	CC30LH470F	Capacitor, 47 pF
C9	PC41J8R5	Capacitor, .8-8.5 pF
C10	PC41J8R5	Capacitor, .8-8.5 pF
C11	SM-C-413567-1	Capacitor, .001 μF
C12	SM-C-413567-1	Capacitor, .001 μF
CR1	JAN1N757A	Diode, Zener
CR2	JAN1N4148	Diode
CR3	JAN1N4148	Diode
L1	SM-C-413577	Coil, 1 mh
L2	SM-D-413692	Coil, Adjustable
Q1	JAN2N2907A	Transistor
R1	RC07GF222K	Resistor, 2.2kΩ
R2	RC07GF682K	Resistor, 6.8kΩ
R3	RC07GF471J	Resistor, 470Ω
R5	RC07GF563J	Resistor, 56kΩ
R6	RC07GF563J	Resistor, 56kΩ
T1	SM-D-413690	Transformer
T2	SM-C-413694	Transformer
T3	SM-C-413681	Transformer

LIST OF MATERIAL

MODULE: A-3700A

REF.	PART NO.	DESCRIPTION
C1	SM-D-413707-3	Capacitor, .2 μF
C2	SM-D-413707-3	Capacitor, .2 μF
C3	SM-D-413707-4	Capacitor, .33 μF
C4	SM-D-413707-2	Capacitor, .1 μF
C5	CM05FD221J03	Capacitor, 220 pF
C6	CK05BX102M	Capacitor, 1000 pF
C7	CM05FD121J03	Capacitor, 120 pF
C8	CM05FD151J03	Capacitor, 150 pF
C9	SM-C-413567-4	Capacitor, .01 μF
C10	SM-C-413567-4	Capacitor, .01 μF
C11	SM-C-413567-4	Capacitor, .01 μF
C12	SM-C-413567-4	Capacitor, .01 μF
C13	SM-C-413567-4	Capacitor, .01 μF
C14	SM-C-413567-4	Capacitor, .01 μF
CR1	JAN1N4148	Diode
CR2	JAN1N4148	Diode
CR3	JAN1N4148	Diode
L1	SM-C-413577	Coil, 1 mh
Q1	JAN2N2907A	Transistor
Q2	JAN2N2907A	Transistor
R1	RC07GF124J	Resistor, 12kΩ
R2	RC07GF473J	Resistor, 47kΩ
R3	RC07GF563J	Resistor, 56kΩ
R4	RC07GF563J	Resistor, 56kΩ
R5	RC07GF334J	Resistor, 33kΩ
R6	RC07GF183K	Resistor, 18kΩ
R7	RC07GF431J	Resistor, 430Ω
R8	SM-C-374830-5	Resistor, Variable 5kΩ
R9	RC07GF132J	Resistor, 1.3kΩ
R10	RC07GF332J	Resistor, 3.3kΩ
R11	RC07GF132J	Resistor, 1.3kΩ
R12	RC07GF332J	Resistor, 3.3kΩ
R13	RC07GF472J	Resistor, 4.7kΩ
R14	RC07GF182J	Resistor, 1.8kΩ
R15	RC07GF472J	Resistor, 1.8kΩ
R16	RC07GF182J	Resistor, 1.8kΩ
R17	RC07GF101K	Resistor, 100Ω
R18	RC07GF470K	Resistor, 47Ω
R19	RC07GF181K	Resistor, 180Ω
T1	SM-D-413712	Transformer
T2	SM-D-413714	Transformer

LIST OF MATERIAL

MODULE: A-4100A

REF.	PART NO.	DESCRIPTION
C1	SM-C-413567-4	Capacitor, .01 μF
C2	SM-D-413568-6	Capacitor, 180 pF
C3	SM-C-413567-4	Capacitor, .01 μF
C4	SM-C-413567-4	Capacitor, .01 μF
C5	CM05ED300J03	Capacitor, 30 pF
C6	CM05FD111J03	Capacitor, 110 pF
C7	SM-C-413567-4	Capacitor, .01 μF
C8	SM-C-413567-1	Capacitor, .001 μF
C9	SM-C-413567-4	Capacitor, .01 μF
C10	CM05CD070D03	Capacitor, 7 pF
C11	CM05DC120J03	Capacitor, 12 pF
L1	MS18130-23	Coil, 16 μH
L2	MS18130-23	Coil, 16 μH
Q1	JAN2N3251A	Transistor
Q2	JAN2N3251A	Transistor
R1	RC07GF301J	Resistor, 300Ω
R2	RC07GF180J	Resistor, 18Ω
R3	RC07GF301J	Resistor, 300Ω
R4	RC07GF822K	Resistor, 8.2kΩ
R5	RC07GF472K	Resistor, 4.7kΩ
R6	RC07GF682K	Resistor, 6.8kΩ
R7	RC07GF122K	Resistor, 1.2kΩ
R8	RC07GF472K	Resistor, 4.7kΩ
R9	RC07GF562K	Resistor, 5.6kΩ
R10	RC07GF332K	Resistor, 3.3kΩ
R11	RC07GF390K	Resistor, 39Ω
R12	RC07GF301J	Resistor, 300Ω
R13	RC07GF180J	Resistor, 18Ω
R14	RC07GF301J	Resistor, 300Ω
T1	SM-D-413740	Transformer
T2	SM-D-413735	Transformer
T3	SM-D-413742	Transformer

LIST OF MATERIAL

MODULE: A-4200A

REF.	PART NO.	DESCRIPTION
C1	CK05BX102M	Capacitor, 1000 pF
C2	CK05BX103M	Capacitor, .01 μF
C3	CK05BX103M	Capacitor, .01 μF
C4	CM05ED300J03	Capacitor, 30 pF
C5	CM05ED300J03	Capacitor, 30 pF
C6	CK05BX103M	Capacitor, .01 μF
C7	CK05BX103M	Capacitor, .01 μF
C8	CK05BX103M	Capacitor, .01 μF
C9	CK05BX103M	Capacitor, .01 μF
C10	CK05BX103M	Capacitor, .01 μF
C11	CM05ED300J03	Capacitor, 30 pF
C12	CC20CH070F	Capacitor, 7 pF
C13	CK05BX221M	Capacitor, 220 pF
C14	CK05BX102M	Capacitor, 1000 pF
C15	CSR13E155M	Capacitor, 1.5 μF
C16	CK05BX103M	Capacitor, .01 μF
C17	CK05BX102M	Capacitor, 1000 pF
C18	CK05BX103M	Capacitor, .01 μF
CR1	JAN1N4148	Diode
CR2	JAN1N4148	Diode
IC1	SK-LM3075D	Integrated Circuit
L1	MS75008-33	Coil, 2.7 μH
L2	SM-D-413779	Coil, Adjustable
L3	MS18130-23	Coil, 16 μH
L4	MS18130-23	Coil, 16 μH
Q1	JAN2N3251A	Transistor
Q2	JAN2N2907A	Transistor
R1	RC07GF510J	Resistor, 51Ω
R2	RC07GF473K	Resistor, 47kΩ
R3	RC07GF153K	Resistor, 15kΩ
R4	RC07GF152K	Resistor, 1.5kΩ
R5	RC07GF273K	Resistor, 27kΩ
R6	RC07GF152K	Resistor, 1.5kΩ
R7	RC07GF510J	Resistor, 51Ω
R8	RC07GF331K	Resistor, 330Ω
R9	RC07GF103K	Resistor, 10kΩ
R10	RC07GF103K	Resistor, 10kΩ
R11	RC07GF273K	Resistor, 27kΩ
R12	RC07GF682K	Resistor, 6.8kΩ

LIST OF MATERIAL

MODULE: A-4300A

REF.	PART NO.	DESCRIPTION
C1	CSR13E155MM	Capacitor, 1.5 μF
C2	CSR13E156MM	Capacitor, 15 μF
C3	CK61BX331MM	Capacitor, 330 pF
C4	CSR13E156MM	Capacitor, 15 μF
Q1	JAN2N2222A	Transistor
Q2	JAN2N2907A	Transistor
Q3	JAN2N2907A	Transistor
R1	RC07GF104J	Resistor, 100kΩ
R2	RC07GF334J	Resistor, 330kΩ
R3	RC07GF332K	Resistor, 3.3kΩ
R4	SM-C-374830-2	Resistor, Variable, 1kΩ
R5	RC07GF472K	Resistor, 4.7kΩ
R6	RC07GF332K	Resistor, 3.3kΩ
R7	RC07GF100K	Resistor, 10Ω
R8	RC07GF511J	Resistor, 510Ω
R9	RC07GF471K	Resistor, 470Ω
R10	RC07GF472K	Resistor, 4.7kΩ

LIST OF MATERIAL

MODULE: A-5100A

REF.	PART NO.	DESCRIPTION
C1	CSR13E155MM	Capacitor, 1.5 μF
C2	CSR13E156MM	Capacitor, 15 μF
C3	CSR13E156MM	Capacitor, 15 μF
C4	CSR13E155MM	Capacitor, 1.5 μF
C5	CSR13E106MM	Capacitor, 10 μF
C6	CSR13E106MM	Capacitor, 10 μF
C7	SM-C-413567-1	Capacitor, 1000 pF
C8	SM-C-413567-4	Capacitor, .01 μF
C9	SM-C-413567-2	Capacitor, 3300 pF
CR1	JAN1N645	Diode
CR2	JAN1N645	Diode
CR3	JAN1N645	Diode
CR4	SM-C-318069	Diode
Q1	JAN2N2907A	Transistor
Q2	JAN2N2222A	Transistor
Q3	JAN2N2907A	Transistor
Q4	JAN2N2905A	Transistor
R1	RC07GF272J	Resistor, 2.7kΩ
R2	RC07GF912J	Resistor, 9.1kΩ
R3	RC07GF561J	Resistor, 560Ω
R4	RC07GF391J	Resistor, 390Ω
R5	RC07GF222J	Resistor, 2.2kΩ
R6	RC07GF561J	Resistor, 560Ω
R7	RC07GF122J	Resistor, 1.2kΩ
R9	RC07GF682K	Resistor, 6.8kΩ
R10	RC07GF153K	Resistor, 15kΩ
R11	RC07GF182J	Resistor, 1.8kΩ
R12	RC07GF680J	Resistor, 68Ω
R13	RC07GF680J	Resistor, 68Ω
R14	RC07GF102K	Resistor, 1kΩ
R15	RC07GF101J	Resistor, 100Ω
R16	RC07GF102K	Resistor, 1kΩ
R17	RC07GF162J	Resistor, 1.6kΩ
R18	RC07GF680J	Resistor, 68Ω

LIST OF MATERIAL

MODULE: A-5200A

REF.	PART NO.	DESCRIPTION
C1	M39014/01-1473	Capacitor, .1 μF
C2	M39014/01-1473	Capacitor, .1 μF
C3	M39014/01-1467	Capacitor, .047 μF
C4	M39014/01-1237	Capacitor, .001 μF
C5	CSR13E106KP	Capacitor, 10 μF
C6	M39014/01-1236	Capacitor, .22 μF
D1	JAN1N752A	Diode, Zener 5.6V
D2	JAN1N4148	Diode
D3	JAN1N4148	Diode
D4	JAN1N4148	Diode
D5	JAN1N4148	Diode
D6	JAN1N645	Diode
D7	JAN1N757A	Diode, Zener, 9.1V
D8	JAN1N645	Diode
D9	JAN1N645	Diode
IC1	JM38510/10102BIC	Integrated Circuit, Dual Op-Amp
Q1	JAN2N2222A	Transistor
Q2	JAN2N2222A	Transistor
Q3	JAN2N2222A	Transistor
Q4	JAN2N2222A	Transistor
Q5	JAN2N2907A	Transistor
R1	RC07G182JM	Resistor, 1.8kΩ
R2	RC07G471JM	Resistor, 470Ω
R3	RC07G104JM	Resistor, 100kΩ
R4	RC07G124JM	Resistor, 120kΩ
R5	RC07G273JM	Resistor, 27kΩ
R6	RC07G473JM	Resistor, 47kΩ
R7	SM-C-374830-4	Resistor, Variable 20kΩ
R8	SM-C-374830-4	Resistor, Variable 20kΩ
R9	RCR07G102KM	Resistor, 1kΩ
R10	RCR07G181JM	Resistor, 180Ω
R11	RCR07G273JM	Resistor, 27kΩ
R12	RCR07G473JM	Resistor, 47kΩ
R13	RCR07G473JM	Resistor, 47kΩ
R14	RCR07G105JM	Resistor, 1MΩ
R15	RCR07G273JM	Resistor, 27kΩ
R16	RCR07G391JM	Resistor, 390Ω
R17	RCR07G103JM	Resistor, 10kΩ
R18	RCR07G103JM	Resistor, 10kΩ
R19	RCR07G562JM	Resistor, 5.6kΩ
R20	RCR07G270JM	Resistor, 27Ω

LIST OF MATERIAL

MODULE: A-5200A (Cont'd)

REF.	PART NO.	DESCRIPTION
R21	RCR07G562JM	Resistor, 5.6kΩ
R22	RCR07G332JM	Resistor, 3.3kΩ
R23	RCR07G102KM	Resistor, 1kΩ
R24	RCR07G103JM	Resistor, 10kΩ
R25	RCR07G153JM	Resistor, 15kΩ
R26	RCR07G123JM	Resistor, 12kΩ
R27	RCR07G123JM	Resistor, 12kΩ
R28	RCR07G564JM	Resistor, 560kΩ
R29	RCR07G333JM	Resistor, 33kΩ
R30	RCR07G333JM	Resistor, 33kΩ

LIST OF MATERIAL

MODULE: A-5300A

REF.	PART NO.	DESCRIPTION
C1	CFR04ASA103FM	Capacitor, .01 μF, 1%
C2	CFR04ASA103FM	Capacitor, .01 μF, 1%
C3	CFR04ASA103FM	Capacitor, .01 μF, 1%
C4	M23269/01-3112	Capacitor, 200 pF, 1%
C5	M23269/01-3112	Capacitor, 200 pF, 1%
C6	M23269/01-3112	Capacitor, 200 pF, 1%
R1	RNC55H1583FS	Resistor, 158kΩ , 1%
R2	RNC55H1583FS	Resistor, 158kΩ , 1%
R3	SM-C-374830-5	Resistor, Variable 5kΩ
R4	RNC55H3922FS	Resistor, 39.2kΩ, 1%
R5	RCR07G183JM	Resistor, 18kΩ

LIST OF MATERIAL

MODULE: A-6300A

REF.	PART NO.	DESCRIPTION
C1	CM05ED680G03	Capacitor, 68 pF
C2	SM-C-374834-1	Capacitor, .001 µF
C3	SM-C-374834-1	Capacitor, .001 µF
C4	SM-C-374834-1	Capacitor, .001 µF
C5	CC20CK020C	Capacitor, 2 pF
C6	CC20CH070C	Capacitor, 7 pF
C7	SM-C-374835-9	Capacitor, 7 pF
C8	CM05ED560G03	Capacitor, 56 pF
C9	SM-C-374834-1	Capacitor, .001 µF
C10	CM05FD151G03	Capacitor, 150 pF
C11	SM-C-374835-8	Capacitor, 2.5 pF
C12	CC20UJ080C	Capacitor, 8 pF
C13	PC41J4R5	Capacitor, .8-4.5 pF
C14	PC41J4R5	Capacitor, .8-4.5 pF
C15	CC20TH120G	Capacitor, 12 pF
CR1	SM-B-416394	Diode, Varactor
CR2	SM-B-416394	Diode, Varactor
L1	SM-C-374825-2	Coil
L2	SM-C-416332	Coil
L3	SM-C-416321-2	Coil
L4	SM-C-416352-1	Coil
L5	SM-C-416327-4	Coil
Q1	SK2N3251A	Transistor
R1	RC07GF105J	Resistor, 1MΩ
R2	RC07GF512J	Resistor, 5.1kΩ
R3	RC07GF473K	Resistor, 47kΩ
R4	RC07GF473K	Resistor, 47kΩ
R5	RC07GF102J	Resistor, 1kΩ
R6	RC07GF182J	Resistor, 1.8kΩ
R7	RC07GF332J	Resistor, 3.3kΩ
R8	RC07GF470J	Resistor, 47Ω

LIST OF MATERIAL

MODULE: A-6400A

REF.	PART NO.	DESCRIPTION
C1	SM-C-374834-2	Capacitor, .0047 μF
C2	CM05ED680G03	Capacitor, 68 pF
C3	SM-C-374834-1	Capacitor, .001 μF
C4	CM05DD101K03	Capacitor, 100 pF
C5	CC20CH040C	Capacitor, 4 pF
C6	PC41J4R5	Capacitor, .8-4.5 pF
C7	CC20CH100D	Capacitor, 10 pF
C8	CC20CH180J	Capacitor, 18 pF
C9	PC41J4R5	Capacitor, .8-4.5 pF
C10	CC20CH180J	Capacitor, 18 pF
L1	MS75008-33	Coil, 2.7 μH
L2	SM-C-416332	Coil
L3	SM-C-416321-2	Coil
L4	SM-C-416352-2	Coil
L5	SM-C-416327-3	Coil
Q1	SK2N2222A	Transistor
Q2	SK2N2222A	Transistor
R1	RC07GF182J	Resistor, 1.8kΩ
R2	RC07GF222J	Resistor, 2.2kΩ
R3	RC07GF331J	Resistor, 330Ω
R6	RC07GF220J	Resistor, 22Ω
R7	RC07GF221J	Resistor, 220Ω
R8	RC07GF182J	Resistor, 1.8kΩ
R9	RC07GF332J	Resistor, 3.3kΩ
R10	RC07GF270J	Resistor, 27Ω

LIST OF MATERIAL

MODULE: A-7000A

REF.	PART NO.	DESCRIPTION
C1	CSR13F476KM	Capacitor, 47 μF
C2	CSR13F476KM	Capacitor, 47 μF
CR1	JAN1N649	Diode
CR2	JAN1N649	Diode
CR3	JAN1N645	Diode
CR4	JAN1N645	Diode
Q1	SK2N5681	Transistor
R1	RC07GF102J	Resistor, 1kΩ
R2	RC07GF270K	Resistor, 27Ω
T1	SM-D-414780	Transformer

LIST OF MATERIAL

MODULE: A-7200A

REF.	PART NO.	DESCRIPTION
C1	CSR13E155MM	Capacitor, 1.5 μF
C2	CSR13E106MM	Capacitor, 10 μF
C4	CSR13E155MM	Capacitor, 1.5 μF
C5	SM-C-413567-4	Capacitor, .01 μF
C6	CSR13F226MM	Capacitor, 22 μF
C7	SM-C-413567-3	Capacitor, .0047 μF
CR1	JAN1N4148	Diode
CR2	JAN1N4148	Diode
CR3	JAN1N645	Diode
CR4	JAN1N645	Diode
CR5	JAN1N759A	Diode, Zener
Q1	SK2N5868	Transistor
Q2	SK2N5868	Transistor
Q3	JAN2N2222A	Transistor
Q4	JAN2N2222A	Transistor
Q5	JAN2N2905A	Transistor
R1	RC07GF122K	Resistor, 1.2kΩ
R3	RC07GF680J	Resistor, 68Ω
R4	RC07GF562J	Resistor, 5.6kΩ
R5	RC07GF223J	Resistor, 22kΩ
R6	RC07GF392J	Resistor, 3.9kΩ
R8	RC07GF223J	Resistor, 22kΩ
R9	RC07GF562J	Resistor, 5.6kΩ
R10	RC07GF181K	Resistor, 180Ω
T1	SM-D-414743	Reactor-Transformer

LIST OF MATERIAL

MODULE: A-8100A

REF.	PART NO.	DESCRIPTION
C1	CM05FD331J03	Capacitor, 330 pF
C2	SM-C-413567-3	Capacitor, .0047 μF
C3	CM06FD102J03	Capacitor, 1000 pF
C4	PC41H120	Capacitor, .8-12 pF
C5	CC20SH360G	Capacitor, 36 pF
C6	CM05FD271J03	Capacitor, 270 pF
C7	CSR13G475KM	Capacitor, 4.7 μF
C8	CSR13G394KM	Capacitor, .39 μF
C9	CK05BX102M	Capacitor, 1000 pF
C10	SM-C-413567-3	Capacitor, .0047 μF
C11	SM-C-413567-3	Capacitor, .0047 μF
C12	CSR13G394KM	Capacitor, .39 μF
C13	SM-C-413567-3	Capacitor, .0047 μF
C14	SM-D-413568-14	Capacitor, 510 pF
C15	SM-D-413568-14	Capacitor, 510 pF
C16	PC51J110	Capacitor, 0.8-11 pF
C17	CK05BX102M	Capacitor, 1000 pF
CR1	JAN1N752A	Diode, Zener
CR2	SM-C-374845-1	Diode, Varactor
CR3	SM-C-374845-1	Diode, Varactor
CR4	JAN1N4148	Diode
CR5	JAN1N4148	Diode
CR6	JAN1N4148	Diode
L1	SM-C-414194	Coil
Q1	JAN2N3251A	Transistor
Q2	JAN2N3251A	Transistor
Q3	JAN2N3251A	Transistor
R1	RC07GF332J	Resistor, 3.3kΩ
R2	RC07GF681J	Resistor, 680Ω
R3	RC07GF103J	Resistor, 10kΩ
R4	RC07GF101K	Resistor, 100Ω
R5	RC07GF122J	Resistor, 1.2kΩ
R6	RC07GF821J	Resistor, 820Ω
R7	RC07GF152J	Resistor, 1.5kΩ
R8	RC07GF562J	Resistor, 5.6kΩ
R9	RC07GF221J	Resistor, 220Ω
R10	RC07GF273J	Resistor, 27kΩ
R11	RC07GF271J	Resistor, 270Ω
R12	RC07GF221J	Resistor, 220Ω
R13	RC07GF152J	Resistor, 1.5kΩ
R14	RC07GF683J	Resistor, 68kΩ
R15	RC07GF683J	Resistor, 68kΩ
R16	RC07GF473J	Resistor, 47kΩ
R17	RC07GF103J	Resistor, 10kΩ
R18	RC07GF102J	Resistor, 1kΩ
T1	SM-C-414189	Transformer
Y1	SM-D-414184	Xtal, 11.525 MHz

LIST OF MATERIAL

MODULE: A-8200A

REF.	PART NO.	DESCRIPTION
C1	CM05FD271J03	Capacitor, 270 pF
C2	SM-C-413567-2	Capacitor, .0033 μF
C3	SM-C-413567-2	Capacitor, .0033 μF
C4	SM-C-413567-2	Capacitor, .0033 μF
C5	CC20UJ560G	Capacitor, 56 pF
C6	CM06FD302J03	Capacitor, 3000 pF
C7	PC41J4R5	Capacitor, .5-4.5 pF
C8	CM06FD162J03	Capacitor, 1600 pF
C9	CM05ED300J03	Capacitor, 30 pF
C10	CC20UJ150G	Capacitor, 15 pF
C11	SM-C-413567-2	Capacitor, .0033 μF
C12	CM05FD331J03	Capacitor, 330 pF
CR1	JAN1N4148	Diode
CR2	JAN1N4148	Diode
CR2	JAN1N4148	Diode
L1	SM-C-413577	Coil, 1 mH
L2	SM-C-414805	Coil
Q1	JAN2N3251A	Transistor
Q2	JAN2N3251A	Transistor
R1	RC07GF431J	Resistor, 430Ω
R2	RC07GF122K	Resistor, 1.2kΩ
R3	RC07GF103K	Resistor, 10kΩ
R4	RC07GF682k	Resistor, 6.8kΩ
R5	RC07GF473J	Resistor, 47kΩ
R6	RC07GF683K	Resistor, 68kΩ
R7	RC07GF222J	Resistor, 2.2kΩ
R8	SM-C-414224	Resistor, 82.5kΩ
R9	SM-C-414224	Resistor, 82.5kΩ
R10	RC07GF822K	Resistor, 8.2kΩ
R11	RC07GF103K	Resistor, 10kΩ
R12	RC07GF122K	Resistor, 1.2kΩ
R13	RC07GF431J	Resistor, 430Ω
T1	SM-D-414231	Transformer
T2	SM-D-414233	Transformer
T3	SM-C-414228	Transformer
T4	SM-D-414235	Transformer

LIST OF MATERIAL

MODULE: A-8300A

REF.	PART NO.	DESCRIPTION
C1	CC20UJ010C	Capacitor, 1 pF
C2	SM-C-413567-4	Capacitor, .01 μF
C3	SM-C-413567-4	Capacitor, .01 μF
C4	SM-C-413567-4	Capacitor, .01 μF
C5	SM-C-413567-4	Capacitor, .01 μF
C6	SM-C-413567-4	Capacitor, .01 μF
C7	SM-C-413567-4	Capacitor, .01 μF
C8	CM05FD391J03	Capacitor, 390 pF
C9	CC20UJ100G	Capacitor, 10 pF
Q1	JAN2N3251A	Transistor
Q2	JAN2N3251A	Transistor
R1	RC07GF103K	Resistor, 10kΩ
R2	RC07GF182K	Resistor, 1.8kΩ
R3	RC07GF822K	Resistor, 8.2kΩ
R4	RC07GF562K	Resistor, 5.6kΩ
R5	RC07GF102K	Resistor, 1kΩ
R6	RC07GF822K	Resistor, 8.2kΩ
R7	RC07GF182K	Resistor, 1.8kΩ
R8	RC07GF182K	Resistor, 1.8kΩ
R9	RC07GF821K	Resistor, 820Ω
T1	SM-D-414212	Transformer
T2	SM-D-414210	Transformer
T3	SM-D-414208	Transformer

LIST OF MATERIAL

MODULE: A-8400A

REF.	PART NO.	DESCRIPTION
C1	SM-D-413568-1	Capacitor, 10 pF
C2	CM05ED200J03	Capacitor, 20 pF
C3	SM-D-413568-1	Capacitor, 10 pF
C4	CM05FD302J03	Capacitor, 3000 pF
C5	SM-D-413707-2	Capacitor, .1 μF
C6	CSR13BE106K	Capacitor, 10 μF
C7	CSR13BF105K	Capacitor, 1 μF
C8	CSR13BF684K	Capacitor, .68 μF
C9	CSR13BF334K	Capacitor, .33 μF
L1	SM-C-414266	Coil
Q1	JAN2N2222A	Transistor
Q2	SK2N4948	Transistor
Q3	JAN2N2222A	Transistor
R1	RC07GF222J	Resistor, 2.2kΩ
R2	RC07GF394J	Resistor, 390kΩ
R3	RC07GF472K	Resistor, 47kΩ
R4	RC07GF473K	Resistor, 47kΩ
R5	RC07GF822J	Resistor, 8.2kΩ
R6	RC07GF131J	Resistor, 130Ω
R7	RC07GF152K	Resistor, 1.5kΩ
R8	RC07GF473K	Resistor, 47kΩ
R9	RC07GF622J	Resistor, 6.2kΩ
R10	RC07GF821J	Resistor, 820Ω
R11	RC07GF224J	Resistor, 220kΩ
T1	SM-D-413716	Transformer

LIST OF MATERIAL

MODULE: A-8500A

REF.	PART NO.	DESCRIPTION
C1	CSR13E106MM	Capacitor, 10 μF
C2	SM-C-413567-3	Capacitor, .0047 μF
C3	CSR13E106KM	Capacitor, 10 μF
C4	CSR13E106MM	Capacitor, 10 μF
C5	CSR13E106KM	Capacitor, 10 μF
C6	CSR13E106MM	Capacitor, 10 μF
C7	CSR13E476KM	Capacitor, 47 μF
C8	CSR13G105KM	Capacitor, 1.0 μF
C9	SM-D-413707-1	Capacitor, .05 μF
C10	SM-D-413707-1	Capacitor, .05 μF
C11	CSR13E106MM	Capacitor, 10 μF
C12	CK61BX471K	Capacitor, 470 μF
CR1	JAN1N4148	Diode
CR2	JAN1N4148	Diode
CR3	JAN1N4148	Diode
CR4	JAN1N4148	Diode
CR5	JAN1N759A	Diode, Zener
Q1	JAN2N2222A	Transistor
Q2	JAN2N2222A	Transistor
Q3	JAN2N2907A	Transistor
Q4	JAN2N2222A	Transistor
R1	RC07GF181K	Resistor, 180Ω
R2	RC07GF183J	Resistor, 18kΩ
R3	RC07GF332J	Resistor, 3.3kΩ
R4	RC07GF561J	Resistor 560Ω
R5	RC07GF332J	Resistor, 3.3kΩ
R6	RC07GF682K	Resistor, 6.8kΩ
R7	RC07GF103K	Resistor, 10kΩ
R8	RC07GF332J	Resistor, 3.3kΩ
R9	RC07GF223K	Resistor, 22kΩ
R10	RC07GF102K	Resistor, 1kΩ
R11	RC07GF562K	Resistor, 5.6kΩ
R12	RC07GF621J	Resistor, 620Ω
R13	RC07GF912J	Resistor, 9.1kΩ
R14	RC07GF153K	Resistor, 15kΩ
R15	SM-C-374830-3	Resistor, Variable, 10kΩ
R16	SM-C-374830-3	Resistor, Variable, 10kΩ
R17	RC07GF121J	Resistor, 120Ω
R18	RC07GF103K	Resistor, 10kΩ
R19	RC07GF821K	Resistor, 820Ω
R20	RC07GF681K	Resistor, 680Ω
R21	RC07GF561J	Resistor, 560Ω
R22	RC07GF680J	Resistor, 68Ω
R23	RC07GF472K	Resistor, 4.7kΩ
T1	SM-C-414248	Transformer

LIST OF MATERIAL

MODULE: A-9000A

REF.	PART NO.	DESCRIPTION
C1	M39006/09-8332	Capacitor, 160 μF
C2	M39006/09-8332	Capacitor, 160 μF
C3	CP53B1EG105K	Capacitor, 1.0 μF
C4	M39022/02-1212	Capacitor, 3.3 μF
C5	CMR05F391JPDM	Capacitor, 390 pF
C6	M39014/01-1238	Capacitor, 1000 pF
C7	CSR136475KM	Capacitor, 4.7 μF, 50 VDC
C8	M39022/02-1196	Capacitor, .68 μF, 400 VDC
CR1	JAN1N4942	Diode
CR2	JAN1N4942	Diode
CR3	JAN1N4944	Diode
CR4	JAN1N4944	Diode
CR5	JAN1N4944	Diode
CR6	JAN1N4944	Diode
CR7	JAN1N4948	Diode
CR8	JAN1N4948	Diode
CR9	JAN1N4948	Diode
CR10	JAN1N4948	Diode
CR11	JAN1N4942	Diode
CR12	JAN1N4942	Diode
CR13	JAN1N4942	Diode
CR14	JAN1N4942	Diode
CR15	JAN1N4942	Diode
K1	SM-C-413824	Relay
K2	SM-C-413824	Relay
L1	SM-C-374998	Coil, .5 mh
L2	SK-NEW-439959	Coil, 150 mh
R1	RCR42G564KM	Resistor, 560kΩ
R2	RCR32G154KM	Resistor, 150kΩ
R3	RER60F2370M	Resistor, 237Ω
R4	RER60F3480M	Resistor, 348Ω
R5	RWR80S49R9FM	Resistor, 49.9Ω
R6	RWR89S3830FM	Resistor, 383Ω
R7	RWR89S2740FM	Resistor, 274Ω
R8	RWR80S10R0FM	Resistor, 10Ω
R9	RCR20G101KM	Resistor, 100Ω
R10	RCR20G101KM	Resistor, 100Ω
R11	RWR89S6R81FM	Resistor, 6.81Ω
R12	RWR89S6R81FM	Resistor, 6.81Ω
T1	SK-NEW-439960	Transformer (DC)
T2	SK-NEW-374999	Transformer (AC)

<u>LIST OF MATERIAL</u>

MODULE: A-9400B

REF.	PART NO.	DESCRIPTION
C1	M39014/02-1223	Capacitor, .033 μF
Q1	SK-NEW-3792	Transistor, (2N3792 IN TO-203AA)
Q2	SK-NEW-3792	Transistor, (2N3792 IN TO-203AA)
Q3	SK-NEW-3792	Transistor, (2N3792 IN TO-203AA)
Q4	SK-NEW-3792	Transistor, (2N3792 IN TO-203AA)
Q5	SK-NEW-3792	Transistor, (2N3792 IN TO-203AA)
Q6	SK-NEW-3792	Transistor, (2N3792 IN TO-203AA)
R1	RER65F15ROM	Resistor, 15Ω
R2	RER65F24R9M	Resistor, 24.9Ω
R3	RER65F24R9M	Resistor, 24.9Ω
R4	RWR74SR150FM	Resistor, .15Ω
R5	RWR74SR150FM	Resistor, .15Ω
R6	RWR74SR150FM	Resistor, .15Ω
R7	RWR74SR150FM	Resistor, .15Ω

APPENDIX D

AN/VRC-12 PIP
SAMPLE TEST DATA

TEST: A1400 MODULE PERFORMANCE	SPEC: SC-A-400692	CAP: SEE BELOW	TEST NO:
TEST CONDITIONS: SEE BELOW			DATE: 3-16-76
MATERIAL: SEE BELOW (A1400)			TEMP: RH:
MANUFACTURER: E-SYSTEMS, INC., MEMCOR DIVISION			M. NO:

INSTRUMENTS:

HP 606	RF Generator	Calibrated 3-15-76
HP 608	RF Generator	Calibrated 3-15-76
91 HR	RF Voltmeter	Calibrated 3-13-76
91 HR	RF Voltmeter	Calibrated 1-15-76
1018	Counter	Calibrated 2-16-76
NR 324024-1	Gov't Furnished Gage	Calibrated 11-22-75

TESTED BY: J.E. Phillips

LAB.SUP.CHECK

ENGRG. CHECK:

UNIT NO.	RCVR OUTPUT Para 8.2.6 .85/2.7 mV	RCVR BANDWIDTH Para. 8.2.12 250 KHz Min	XMTR OUTPUT	XMTR BANDWIDTH Para. 8.3.12 1.4 MHz Min	
WITH A1400 BOARDS BUILT PER SM-D-374986 REVISION F					
1	1.30	604	172	2.810	
2	1.43	571	216	2.630	
3	1.62	591	217	2.565	
4	1.44	555	206	2.417	
5	1.16	602	150	2.696	
6	1.33	608	205	2.510	
7	1.46	623	216	2.653	
8	1.38	579	202	2.643	
9	1.26	582	182	2.659	
10	1.42	592	196	2.631	
AVERAGE	1.38	590.7	196.2	2.6214	
WITH A1400 BOARDS MODIFIED PER THIS ECP #~~93~~ 2					
1	1.68	603	153	2.720	
2	1.97	569	179	2.734	
3	2.09	582	202	2.530	
4	1.92	569	168	2.692	
5	1.44	608	126	2.792	
6	1.80	595	169	2.642	
7	1.92	609	177	2.835	
8	1.82	590	168	2.627	
9	1.54	574	148	2.788	
10	1.78	607	165	2.703	
AVERAGE	1.791	587.6	165.5	2.708	

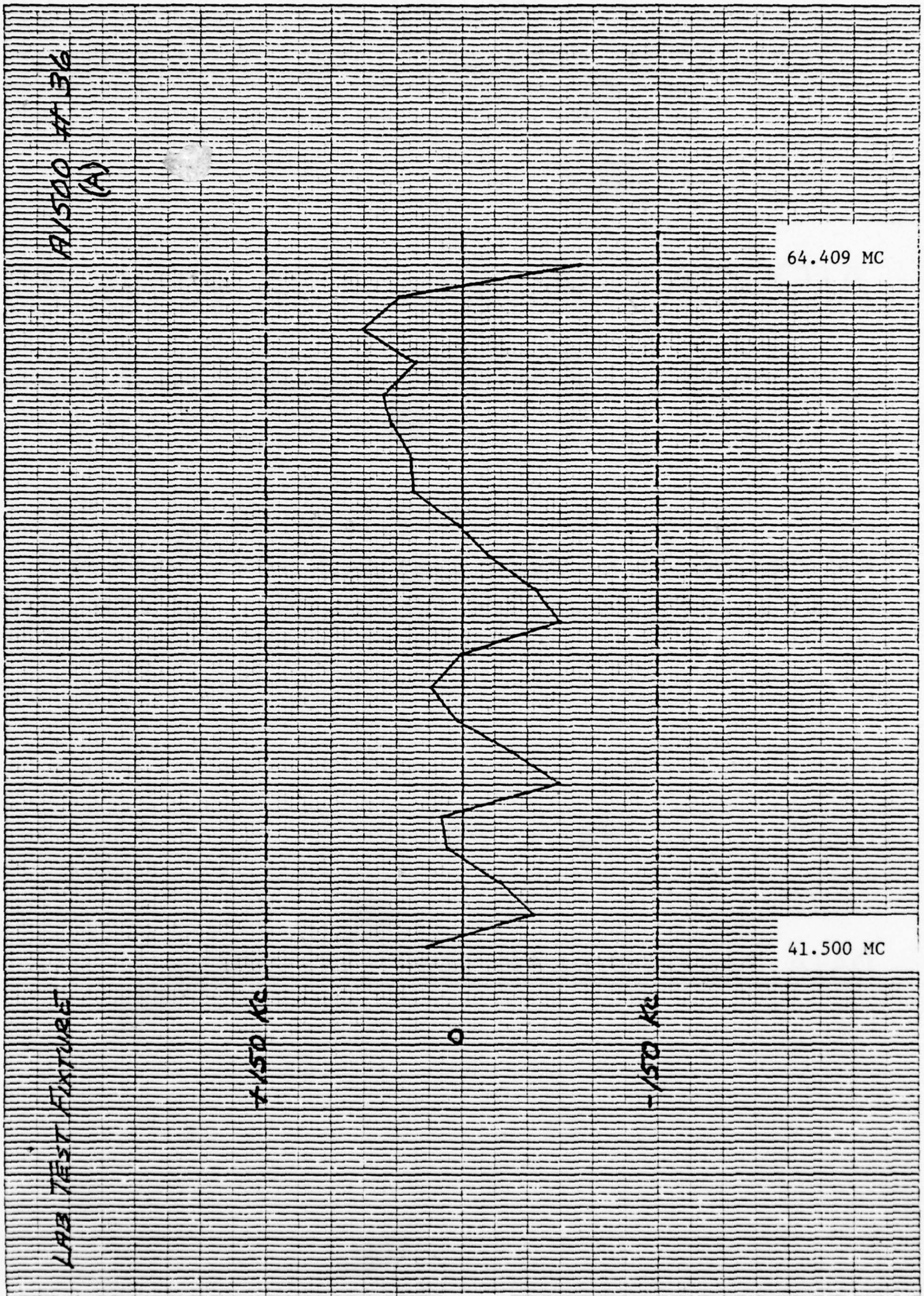
— TRACKING —

CALCULATED STRAIGHT LINE FREQUENCY

A1500A- MODULES # 36, 40, 44, 45, 46 & 48

RF TRACKING IN TEST FIXTURE ON CALIBRATED WHEEL. - FREQUENCY, CRS OUTPUT, MIXER OUTPUT

DATA TAKEN ON LAB TEST FIXTURE

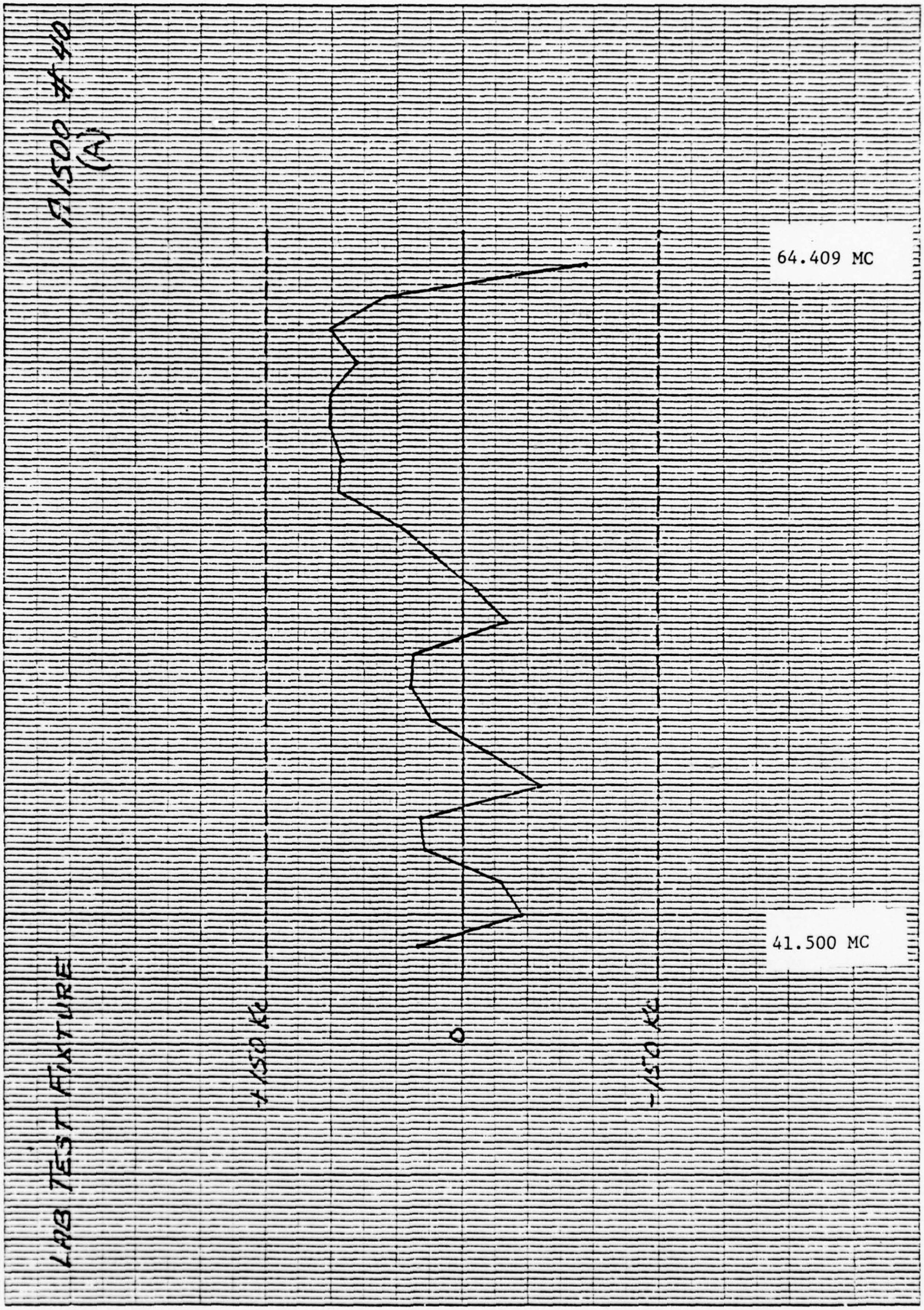

A/1500 # 36
(A)
LAB TEST FIXTURE
+150 Kc
0
-150 Kc
64.409 MC
41.500 MC

#36

A1500A

Calculated Straight Line Frequency	Actual Frequency $\pm$ 150 KC	CRS Output	Mixer Output
41.500	41.527 Mc	422 mv	1.100 v
42.591	42.536 "	435 "	.975 "
43.682	43.654 "	440 "	.925 "
44.773	44.784 "	450 "	.900 "
45.864	45.880 "	460 "	.875 "
46.955	46.880 "	465 "	.850 "
48.045	48.008 "	470 "	.850 "
49.136	49.140 "	475 "	.825 "
50.227	50.240 "	480 "	.810 "
51.318	51.319 "	480 "	.810 "
52.409	52.334 "	480 "	.810 "
53.500	53.444 "	480 "	.810 "
54.591	54.570 "	480 "	.810 "
55.682	55.685 "	475 "	.825 "
56.773	56.810 "	470 "	.840 "
57.864	57.902 "	465 "	.850 "
58.995	59.010 "	455 "	.870 "
60.045	60.105 "	445 "	.875 "
61.136	61.177 "	435 "	.900 "
62.227	62.302 "	425 "	.925 "
63.318	63.367 "	415 "	.950 "
64.409	64.320 "	400 "	.975 "

ALIGNED & TESTED ON LAB TEST FIXTURE

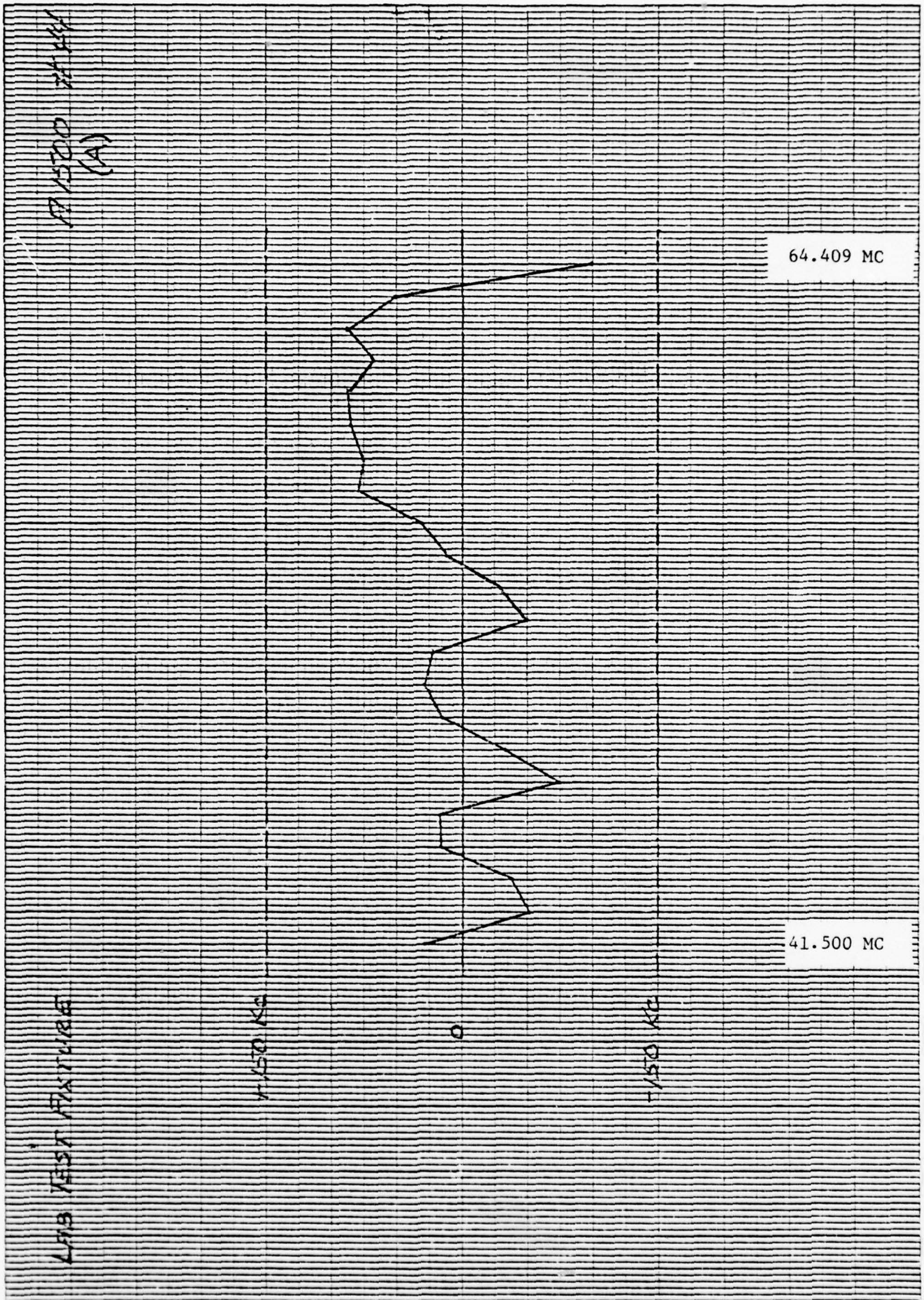

LAB TEST FIXTURE
A1500 #40
(A)
+150 Kc
0
-150 Kc
64.409 MC
41.500 MC

40

A1500A

Calculated Straight Line Frequency	Actual Frequency ± 150 KC	CRS Output	Mixer Output
41.500	41.534 Mc	415 mv	1.150 v
42.591	42.546 "	425 "	1.110 "
43.682	43.654 "	435 "	1.075 "
44.773	44.801 "	450 "	1.025 "
45.864	45.895 "	460 "	1.000 "
46.955	46.897 "	470 "	.960 "
48.045	48.026 "	480 "	.940 "
49.136	49.161 "	485 "	.925 "
50.227	50.267 "	490 "	.900 "
51.318	51.354 "	492 "	.890 "
52.409	52.374 "	495 "	.890 "
53.500	53.490 "	495 "	.875 "
54.591	54.612 "	495 "	.875 "
55.682	55.732 "	490 "	.875 "
56.773	56.868 "	485 "	.875 "
57.864	57.956 "	480 "	.900 "
58.995	59.056 "	470 "	.900 "
60.045	60.146 "	460 "	.925 "
61.136	61.217 "	450 "	.950 "
62.227	62.328 "	440 "	.960 "
63.318	63.378 "	430 "	.990 "
64.409	64.314 "	420 "	1.050 "

ALIGNMENT & TESTING ON LAB TEST FIXTURE

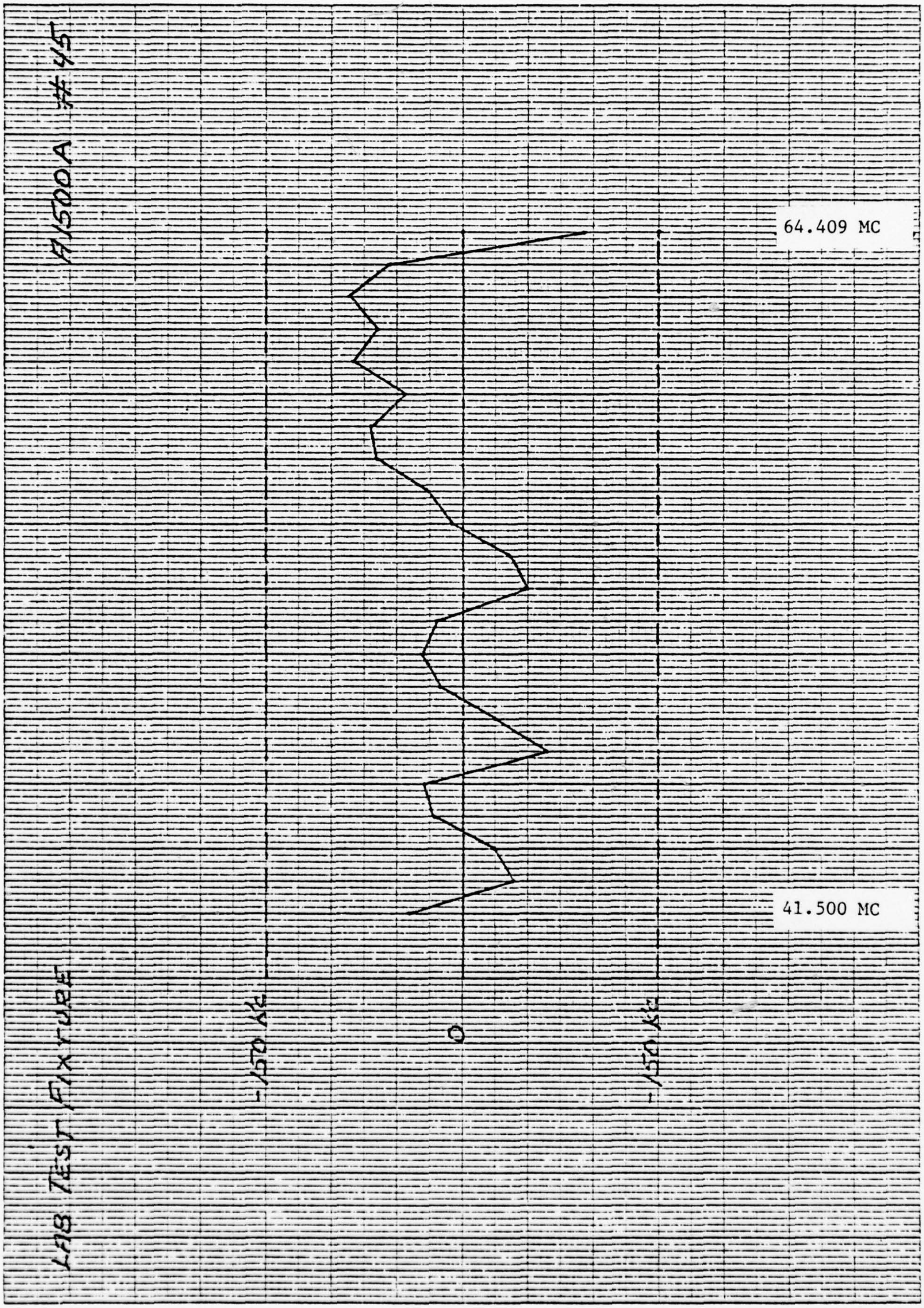

LAB TEST FIXTURE
A 1500 #44
(A)
64.409 MC
41.500 MC
+150 Kc
0
-150 Kc

#44

A1500A

Calculated Straight Line Frequency	Actual Frequency ± 150 KC	CRS Output	Mixer Output
41.500	41.528 Mc	410 mv	1.260 v
42.591	42.540 "	420 "	1.200 "
43.682	43.645 "	430 "	1.140 "
44.773	44.789 "	445 "	1.075 "
45.864	45.881 "	455 "	1.050 "
46.955	46.882 "	465 "	1.000 "
48.045	48.013 "	480 "	.975 "
49.136	49.152 "	485 "	.950 "
50.227	50.255 "	490 "	.925 "
51.318	51.340 "	495 "	.900 "
52.409	52.361 "	500 "	.900 "
53.500	53.470 "	500 "	.898 "
54.591	54.603 "	500 "	.895 "
55.682	55.713 "	495 "	.875 "
56.773	56.852 "	490 "	.875 "
57.864	57.941 "	485 "	.875 "
58.995	59.041 "	475 "	.875 "
60.045	60.132 "	465 "	.875 "
61.136	61.204 "	455 "	.900 "
62.227	62.314 "	445 "	.900 "
63.318	63.369 "	435 "	.925 "
64.409	64.309 "	425 "	.950 "

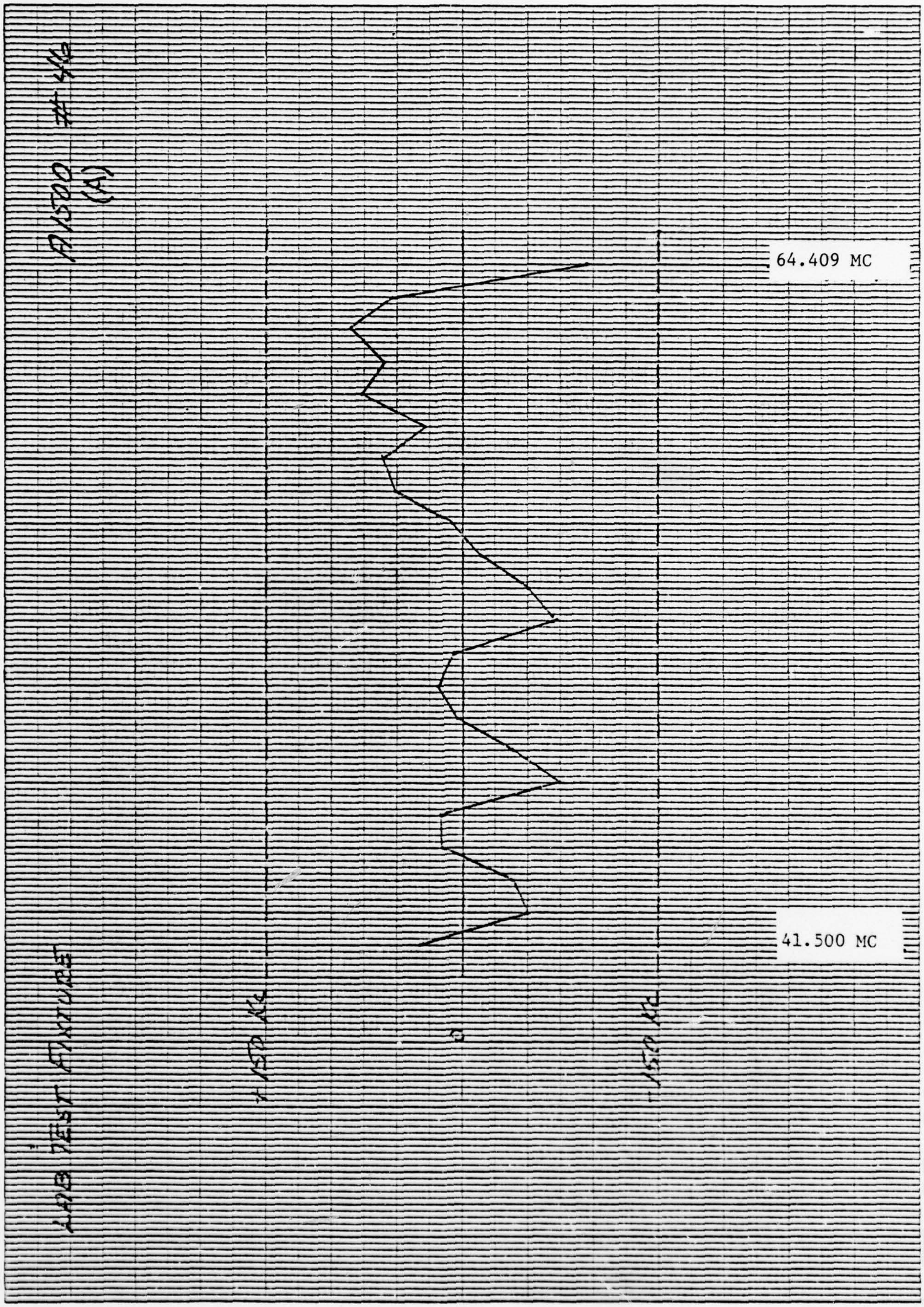
ALIGNED & TESTED ON LAB TEST FIXTURE


LAB TEST FIXTURE 71500A #45
64.409 MC
41.500 MC
-150 KC
0
+150 KC

#45

A1500A

Calculated Straight Line Frequency	Actual Frequency ± 150 KC	CRS Output	Mixer Output
41.500	41.541 Mc	395 mv	1.175 v
42.591	42.553 "	410 "	1.125 "
43.682	43.657 "	420 "	1.050 "
44.773	44.795 "	430 "	1.000 "
45.864	45.893 "	440 "	.975 "
46.955	46.892 "	455 "	.950 "
48.045	48.021 "	465 "	.910 "
49.136	49.155 "	470 "	.900 "
50.227	50.259 "	475 "	.875 "
51.318	51.339 "	480 "	.875 "
52.409	52.362 "	485 "	.850 "
53.500	53.464 "	485 "	.850 "
54.591	54.597 "	485 "	.850 "
55.682	55.709 "	485 "	.850 "
56.773	56.842 "	470 "	.850 "
57.864	57.934 "	465 "	.850 "
58.995	59.040 "	455 "	.860 "
60.045	60.128 "	445 "	.875 "
61.136	61.202 "	435 "	.875 "
62.227	62.313 "	425 "	.900 "
63.318	63.374 "	410 "	.925 "
64.409	64.318 "	400 "	.950 "

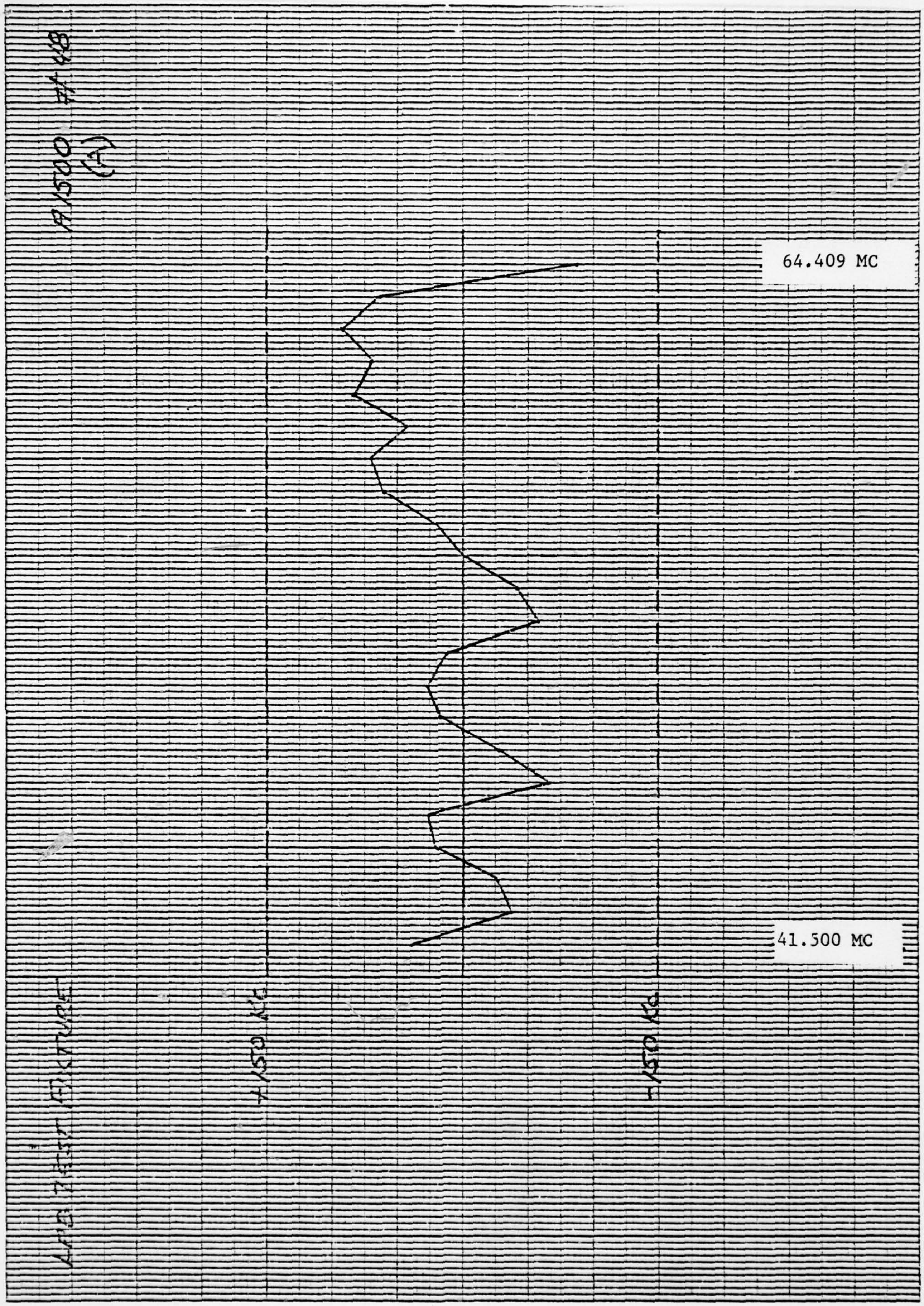

LAB TEST FIXTURE
A1500 # 46
(A)
+150 Kc
0
-150 Kc
64.409 MC
41.500 MC

#46

A1500A

Calculated Straight Line Frequency	Actual Frequency ± 150 KC	CRS Output	Mixer Output
41.500	41.538 Mc	430 mv	1.125 v
42.591	42.541 "	440	1.075 "
43.682	43.644 "	455	1.025 "
44.773	44.788 "	470	1.000 "
45.864	45.880 "	480	.960 "
46.955	46.878 "	490	.940 "
48.045	48.007 "	500	.910 "
49.136	49.140 "	505	.900 "
50.227	50.246 "	510	.900 "
51.318	51.324 "	515	.890 "
52.409	52.344 "	515	.890 "
53.500	53.450 "	515	.890 "
54.591	54.577 "	515	.890 "
55.682	55.690 "	515	.900 "
56.773	56.825 "	505	.900 "
57.864	57.924 "	495	.925 "
58.995	59.023 "	485	.950 "
60.045	60.122 "	475	.960 "
61.136	61.196 "	465	.990 "
62.227	62.312 "	455	1.025 "
63.318	63.372 "	440	1.050 "
64.409	64.314 "	435	1.100 "

ALIGNMENT & TESTING ON LAB TEST FIXTURE


A1500 #48
(A)
64.409 MC
41.500 MC
LAB TEST FIXTURE
+150 KC
-150 KC

#48

A1500A

Calculated Straight Line Frequency	Actual Frequency ± 150 KC	CRS Output	Mixer Output
41.500	41.539 Mc	380 mv	1.075 v
42.591	42.554 "	390 "	1.050 "
43.682	43.656 "	405 "	1.000 "
44.773	44.793 "	415 "	.950 "
45.864	45.889 "	430 "	.910 "
46.955	46.884 "	440 "	.900 "
48.045	48.017 "	450 "	.875 "
49.136	49.152 "	460 "	.850 "
50.227	50.253 "	465 "	.850 "
51.318	51.330 "	470 "	.825 "
52.409	52.352 "	470 "	.825 "
53.500	53.459 "	470 "	.825 "
54.591	54.591 "	470 "	.825 "
55.682	55.701 "	470 "	.825 "
56.773	56.833 "	465 "	.825 "
57.864	57.933 "	455 "	.850 "
58.995	59.037 "	450 "	.850 "
60.045	60.130 "	440 "	.875 "
61.136	61.205 "	430 "	.890 "
62.227	62.319 "	415 "	.910 "
63.318	63.380 "	405 "	.950 "
64.409	64.321 "	395 "	.975 "

ALIGNED & TESTED ON LAB TEST FIXTURE

GOV'T GAGE TEST DATA

A1500A - MODULES # 36, 40, 44, 45, 46, 47, & 48

MIXER OUTPUT, FREQUENCY, CRS OUTPUT, AND VARACTOR SENSITIVITY

SEE ECP # 16

DATA TAKEN ON GOV'T ELECTRICAL GAGES

2

: :

A1500A

LOT NO.	TEST FREQ	OUTPUT VOLTAGE (MV)		TUNER FREQ CONT		CRS OUTPUT (MV)
		MIN	MAX	MIN	MAX	MIN
SAMPLE NO.	41.50 MHz	80	270	987	013	280
#	53.50 MHz	80	270	207	233	280
36	64.41 MHz	80	270	407	433	280
	41.50	170		000		450
	53.50	155		224		530
	64.41	120		431		520

FREQ SHIFT SETTING	LIMITS (KC)		FREQUENCY SHIFT SENSITIVITY 41.50 MHz		53.50 MHz		64.41 MHz	
	MIN	MAX	(-)	(+)	(-)	(+)	(-)	(+)
.2	60	120	73	76	80	84	92	95
.4	60	120	71	79	78	86	89	100
.6	60	120	68	83	74	91	86	102
.8	60	120	65	86	73	94	83	107
1.0	60	120	64	90	70	98	80	112
1.2	60	120	61	94	67	103	78	117
1.4	60	120	60	100	66	108	76	123
1.6	60	120	58	105	64	114	74	128

GOV'T GAGE- DATA

A1500A

LOT NO.	TEST FREQ	OUTPUT VOLTAGE (MV)		TUNER FREQ CONT		CRS OUTPUT (MV)
		MIN	MAX	MIN	MAX	MIN
SAMPLE NO.	41.50 MHz	80	270	987	013	280
	53.50 MHz	80	270	207	233	280
#	64.41 MHz	80	270	407	433	280
40	41.50	155		001		470
	53.50	150		224		540
	64.41	110		431		500

FREQ SHIFT SETTING	LIMITS (KC)		FREQUENCY SHIFT SENSITIVITY 41.50 MHz		53.50 MHz		64.41 MHz	
	MIN	MAX	(-)	(+)	(-)	(+)	(-)	(+)
.2	60	120	78	81	85	88	96	100
.4	60	120	74	84	82	91	93	103
.6	60	120	72	87	78	95	89	108
.8	60	120	69	92	76	100	87	112
1.0	60	120	67	96	74	104	83	117
1.2	60	120	65	100	71	108	82	123
1.4	60	120	63	107	69	115	79	128
1.6	60	120	61	112	66	121	76	135

GOV'T GAGE- DATA

A1500A

LOT NO.	TEST FREQ	OUTPUT VOLTAGE (MV)		TUNER FREQ CONT		CRS OUTPUT (MV)
		MIN	MAX	MIN	MAX	MIN
SAMPLE NO.	41.50 MHz	80	270	987	013	280
	53.50 MHz	80	270	207	233	280
#	64.41 MHz	80	270	407	433	280
44	41.50	155		000		480
	53.50	155		221		530
	64.41	110		424		500

FREQ SHIFT SETTING	LIMITS (KC)		FREQUENCY SHIFT SENSITIVITY 41.50 MHz		53.50 MHz		64.41 MHz	
	MIN	MAX	(-)	(+)	(-)	(+)	(-)	(+)
.2	60	120	75	78	84	87	95	98
.4	60	120	73	81	80	89	93	102
.6	60	120	70	84	78	93	89	106
.8	60	120	68	87	76	96	86	109
1.0	60	120	66	91	73	101	84	114
1.2	60	120	64	95	71	105	81	119
1.4	60	120	63	99	69	110	79	124
1.6	60	120	60	104	67	115	77	130

GOV'T GAGE - DATA

A1500A

LOT NO.	TEST FREQ	OUTPUT VOLTAGE (MV)		TUNER FREQ CONT		CRS OUTPUT (MV)
		MIN	MAX	MIN	MAX	MIN
SAMPLE NO.	41.50 MHz	80	270	987	013	280
	53.50 MHz	80	270	207	233	280
#	64.41 MHz	80	270	407	433	280
45	41.50	160		000		450
	53.50	160		223		520
	64.41	110		431		490

FREQ SHIFT SETTING	LIMITS (KC)		FREQUENCY SHIFT SENSITIVITY 41.50 MHz		53.50 MHz		64.41 MHz	
	MIN	MAX	(-)	(+)	(-)	(+)	(-)	(+)
.2	60	120	74	76	82	95	94	97
.4	60	120	72	80	79	88	90	101
.6	60	120	69	83	77	91	87	104
.8	60	120	66	86	74	96	85	108
1.0	60	120	65	89	71	99	83	112
1.2	60	120	62	94	70	103	80	118
1.4	60	120	61	99	68	109	78	123
1.6	60	120	59	103	65	114	75	128

GOV'T GAGE- DATA

A1500A

LOT NO.	TEST FREQ	OUTPUT VOLTAGE (MV)		TUNER FREQ CONT		CRS OUTPUT (MV)
		MIN	MAX	MIN	MAX	MIN
SAMPLE NO.	41.50 MHz	80	270	987	013	280
	53.50 MHz	80	270	207	233	280
#	64.41 MHz	80	270	407	433	280
46	41.50	160		002		490
	53.50	160		225		570
	64.41	115		431		550

FREQ SHIFT SETTING	LIMITS (KC)		FREQUENCY SHIFT SENSITIVITY 41.50 MHz		53.50 MHz		64.41 MHz	
	MIN	MAX	(-)	(+)	(-)	(+)	(-)	(+)
.2	60	120	78	81	84	88	97	100
.4	60	120	75	84	82	92	93	104
.6	60	120	72	87	79	95	91	108
.8	60	120	70	91	76	99	87	112
1.0	60	120	67	96	74	103	84	117
1.2	60	120	65	100	72	108	83	122
1.4	60	120	64	105	70	114	80	128
1.6	60	120	61	111	68	119	77	134

GOV'T GAGE - DATA

A1500A

LOT NO.	TEST FREQ	OUTPUT VOLTAGE (MV)		TUNER FREQ CONT		CRS OUTPUT (MV)
		MIN	MAX	MIN	MAX	MIN
SAMPLE NO.	41.50 MHz	80	270	987	013	280
	53.50 MHz	80	270	207	233	280
#	64.41 MHz	80	270	407	433	280
47	41.50	159		999		460
	53.50	159		223		530
	64.41	110		430		520

FREQ SHIFT SETTING	LIMITS (KC)		FREQUENCY SHIFT SENSITIVITY 41.50 MHz		53.50 MHz		64.41 MHz	
	MIN	MAX	(-)	(+)	(-)	(+)	(-)	(+)
.2	60	120	75	79	83	87	95	99
.4	60	120	73	81	81	90	93	103
.6	60	120	70	84	78	94	89	106
.8	60	120	68	88	76	97	87	111
1.0	60	120	66	91	73	101	84	115
1.2	60	120	63	96	71	106	81	120
1.4	60	120	62	100	69	111	80	126
1.6	60	120	61	105	68	116	77	131

GOV'T GAGE - DATA

A1500A

LOT NO.	TEST FREQ	OUTPUT VOLTAGE (MV)		TUNER FREQ CONT		CRS OUTPUT (MV)
		MIN	MAX	MIN	MAX	MIN
SAMPLE NO.	41.50 MHz	80	270	987	013	280
	53.50 MHz	80	270	207	233	280
#	64.41 MHz	80	270	407	433	280
48	41.50	150		000		460
	53.50	150		223		530
	64.41	110		431		510

FREQ SHIFT SETTING	LIMITS (KC)		FREQUENCY SHIFT SENSITIVITY 41.50 MHz		53.50 MHz		64.41 MHz	
	MIN	MAX	(-)	(+)	(-)	(+)	(-)	(+)
.2	60	120	77	80	85	89	97	101
.4	60	120	74	83	82	91	94	104
.6	60	120	72	86	80	95	91	108
.8	60	120	70	89	76	99	88	112
1.0	60	120	67	93	75	103	86	117
1.2	60	120	65	98	72	107	83	122
1.4	60	120	64	102	71	113	81	124
1.6	60	120	62	108	68	118	78	127

GOV'T GAGE - DATA

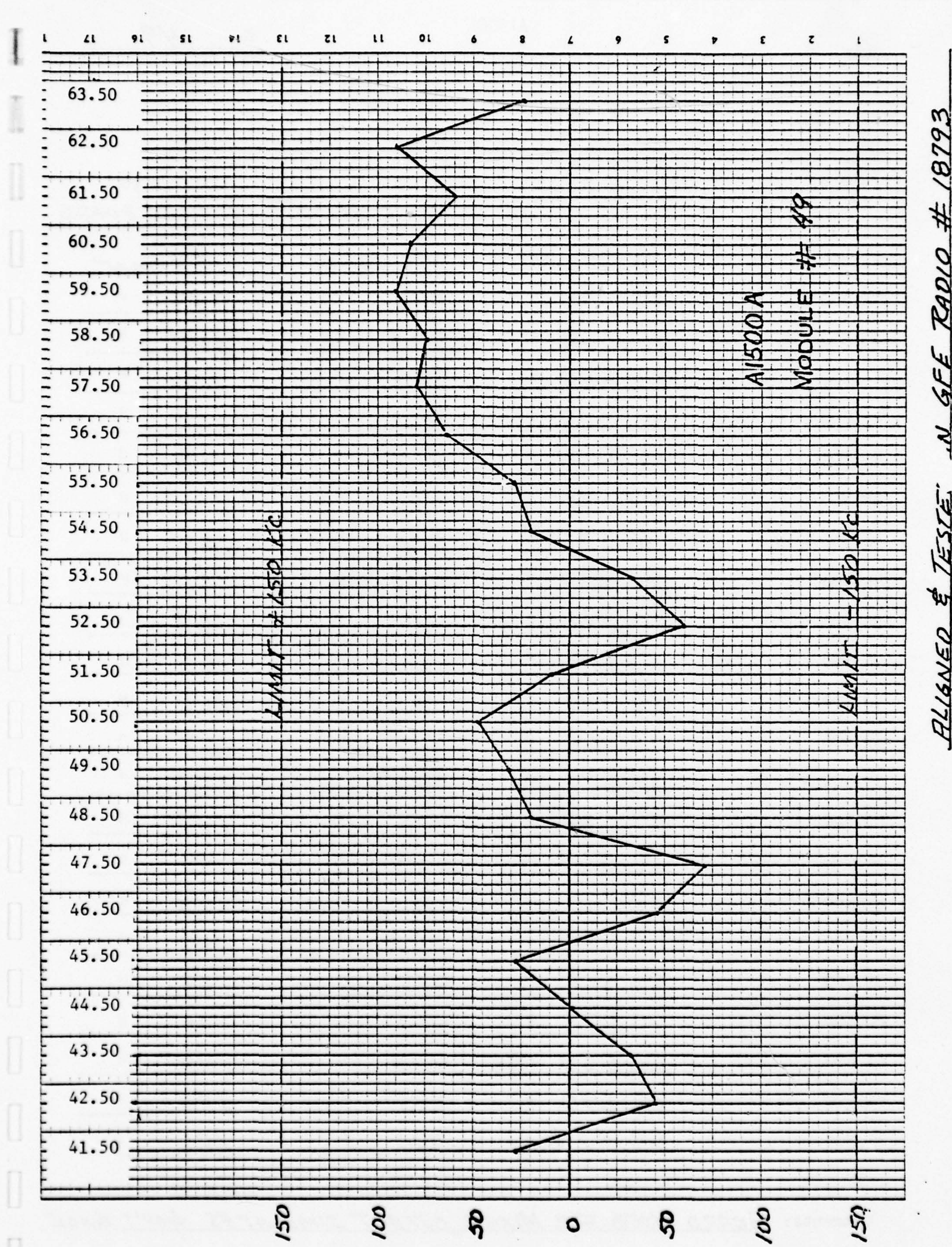
TRACKING

A1500A - MODULES # 47, 48, & 49

RADIO LEVEL DATA -

RF TRACKING - RADIO MC KNOB IN NORMAL DETENT

ALIGNED & TESTED IN GFE RADIO # 18793


ALIGNED & TESTED IN GFE RADIO # 18793
A1500A
MODULE # 49
LIMIT +150 KC
LIMIT -150 KC
63.50
62.50
61.50
60.50
59.50
58.50
57.50
56.50
55.50
54.50
53.50
52.50
51.50
50.50
49.50
48.50
47.50
46.50
45.50
44.50
43.50
42.50
41.50
150
100
50
0
50
100
150

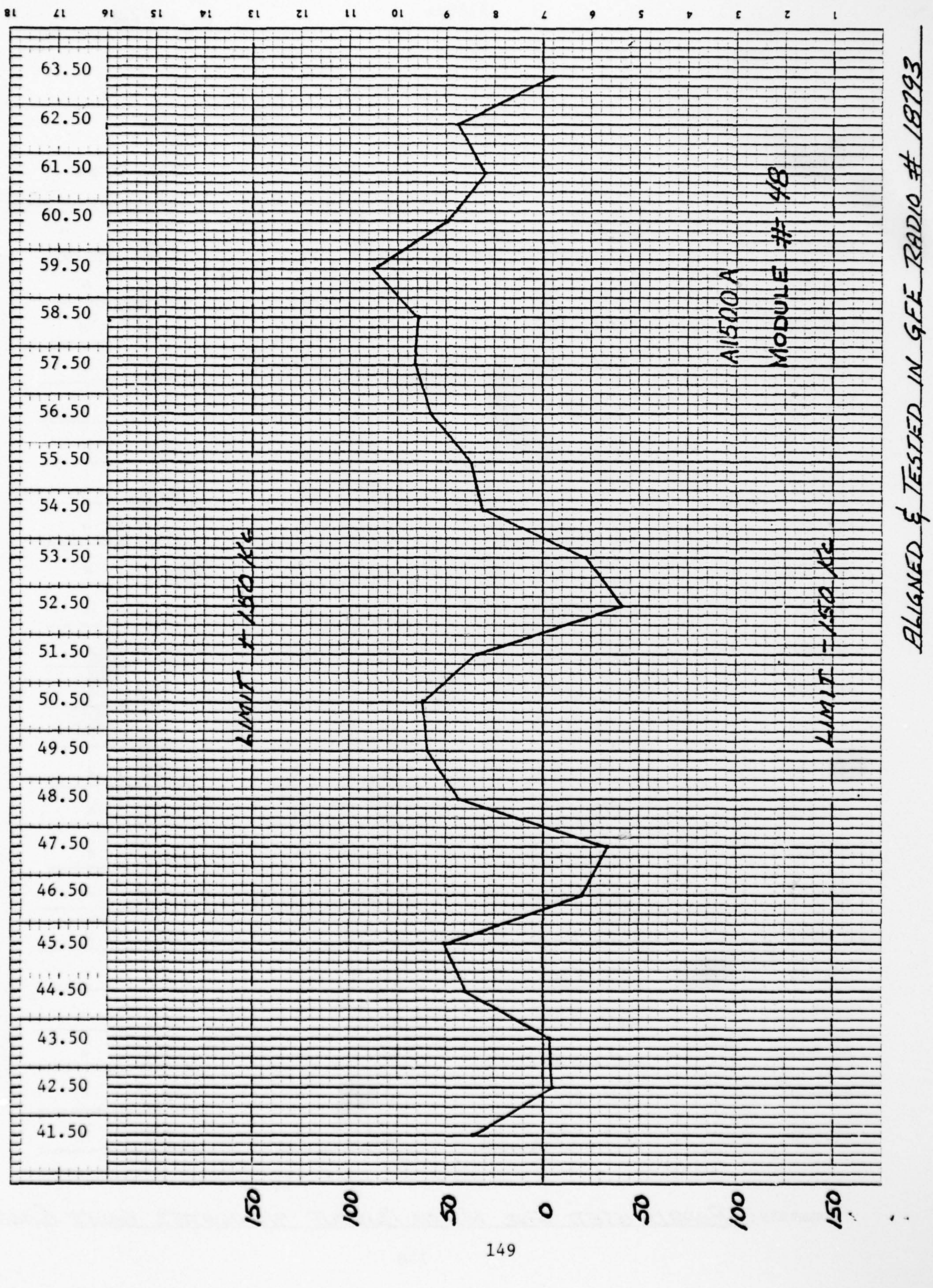
A1500A

\# 49

In Radio Data

Free Running VFO	Actual Frequency ± 150 KC	CRS Output w/RADIO A1400	Mixer Output w/DUMMY BOARD
41.500	41.527 Mc	370 mv	150 mv
42.500	42.455 "	375 "	153 "
43.500	43.468 "	380 "	155 "
44.500	44.499 "	385 "	156 "
45.500	45.527 "	390 "	160 "
46.500	46.454 "	395 "	163 "
47.500	47.430 "	400 "	165 "
48.500	48.520 "	405 "	165 "
49.500	49.531 "	410 "	165 "
50.500	50.542 "	415 "	163 "
51.500	51.509 "	420 "	163 "
52.500	52.440 "	422 "	160 "
53.500	53.468 "	425 "	155 "
54.500	54.521 "	425 "	153 "
55.500	55.529 "	425 "	148 "
56.500	56.564 "	425 "	145 "
57.500	57.580 "	420 "	143 "
58.500	58.575 "	420 "	140 "
59.500	59.591 "	415 "	138 "
60.500	60.583 "	410 "	135 "
61.500	61.560 "	400 "	135 "
62.500	62.590 "	395 "	133 "
63.500	63.524 "	390 "	130 "

Comments: BOARD USED FOR MIXER OUTPUT SIMULATES GOV'T GAGE


ALIGNED & TESTED IN GEE RADIO # 18793
A1500 A
MODULE # 48
LIMIT +150 KC
LIMIT -150 KC
63.50
62.50
61.50
60.50
59.50
58.50
57.50
56.50
55.50
54.50
53.50
52.50
51.50
50.50
49.50
48.50
47.50
46.50
45.50
44.50
43.50
42.50
41.50
150
100
50
0
50
100
150

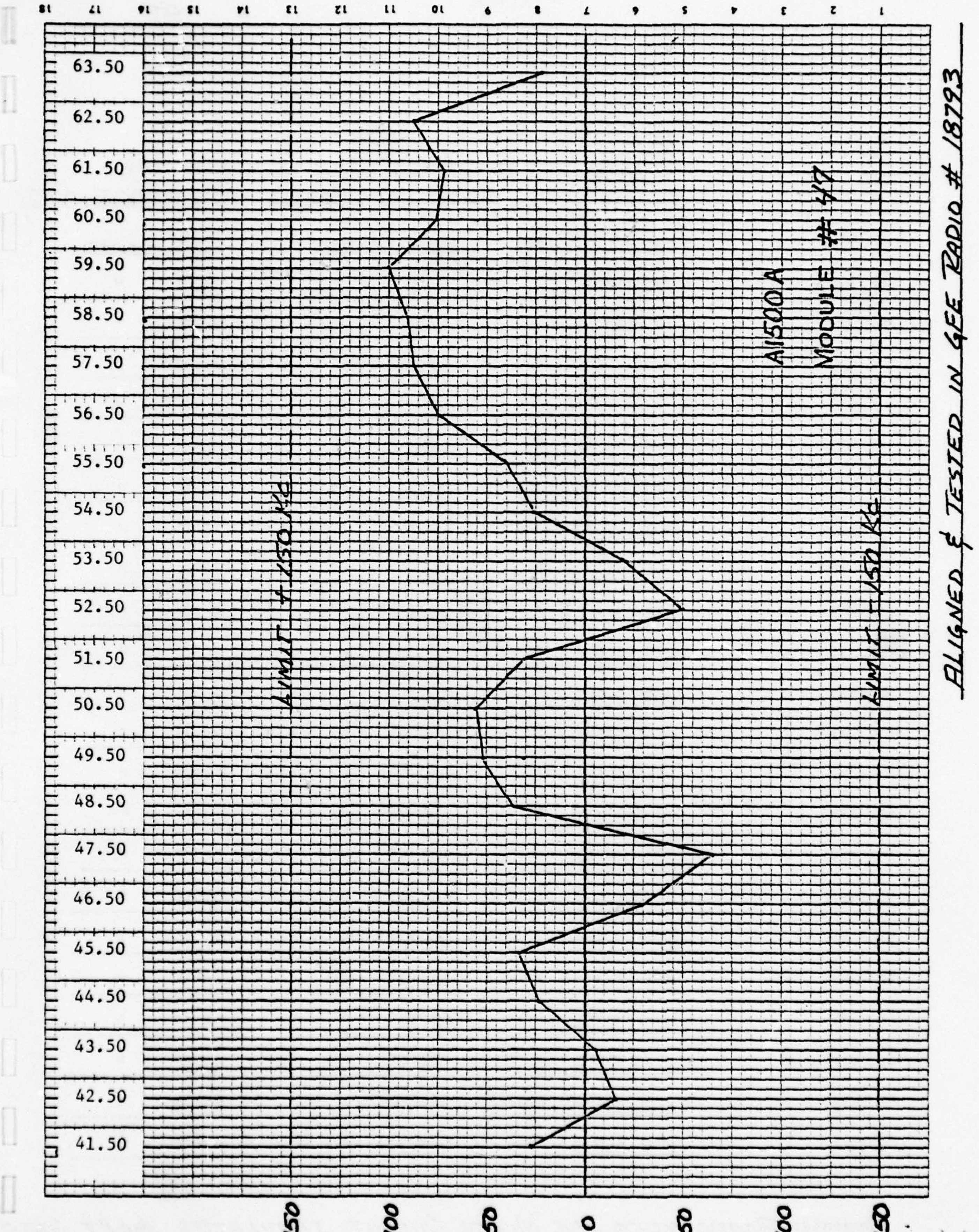
A1500A

In Radio Data

\# 48

Free Running VFO	Actual Frequency ± 150 KC	CRS Output W/RADIO A1400	Mixer Output W/DUMMY BOARD
41.500	41.536 Mc	400 mv	150 mv
42.500	42.495 "	405 "	152 "
43.500	43.496 "	410 "	154 "
44.500	44.540 "	415 "	155 "
45.500	45.551 "	420 "	157 "
46.500	46.480 "	425 "	160 "
47.500	47.467 "	435 "	162 "
48.500	48.544 "	440 "	162 "
49.500	49.559 "	445 "	162 "
50.500	50.562 "	450 "	161 "
51.500	51.534 "	455 "	160 "
52.500	52.459 "	460 "	157 "
53.500	53.477 "	465 "	155 "
54.500	54.531 "	465 "	152 "
55.500	55.537 "	465 "	150 "
56.500	56.558 "	465 "	145 "
57.500	57.566 "	460 "	142 "
58.500	58.565 "	455 "	140 "
59.500	59.587 "	450 "	137 "
60.500	60.550 "	445 "	135 "
61.500	61.530 "	440 "	132 "
62.500	62.544 "	430 "	130 "
63.500	63.495 "	425 "	127 "

Comments: BOARD USED FOR MIXER OUTPUT SIMULATES GOV'T GAGE.


ALIGNED & TESTED IN GEE RADIO # 18793
A1500A
MODULE # 47
LIMIT +150 KC
LIMIT -150 KC
63.50
62.50
61.50
60.50
59.50
58.50
57.50
56.50
55.50
54.50
53.50
52.50
51.50
50.50
49.50
48.50
47.50
46.50
45.50
44.50
43.50
42.50
41.50
150
100
50
0
50
100
150

A1500A

47

In Radio Data

Free Running VFO	Actual Frequency ± 150 KC	CRS Output w/RADIO A1400	Mixer Output w/DUMMY BOARD
41.500	41.527 Mc	415 mv	155 mv
42.500	42.484 "	420 "	157 "
43.500	43.494 "	425 "	162 "
44.500	44.524 "	425 "	165 "
45.500	45.528 "	430 "	165 "
46.500	46.471 "	435 "	167 "
47.500	47.435 "	440 "	169 "
48.500	48.537 "	445 "	170 "
49.500	49.552 "	455 "	170 "
50.500	50.555 "	455 "	167 "
51.500	51.531 "	460 "	165 "
52.500	52.451 "	465 "	162 "
53.500	53.479 "	465 "	160 "
54.500	54.526 "	465 "	155 "
55.500	55.539 "	465 "	150 "
56.500	56.574 "	465 "	147 "
57.500	57.587 "	460 "	144 "
58.500	58.590 "	460 "	142 "
59.500	59.600 "	455 "	137 "
60.500	60.576 "	455 "	135 "
61.500	61.573 "	445 "	132 "
62.500	62.587 "	440 "	130 "
63.500	63.523 "	430 "	127 "

Comments: BOARD USED FOR MIXER OUTPUT SIMULATES GOV'T GAGE

TRACKING

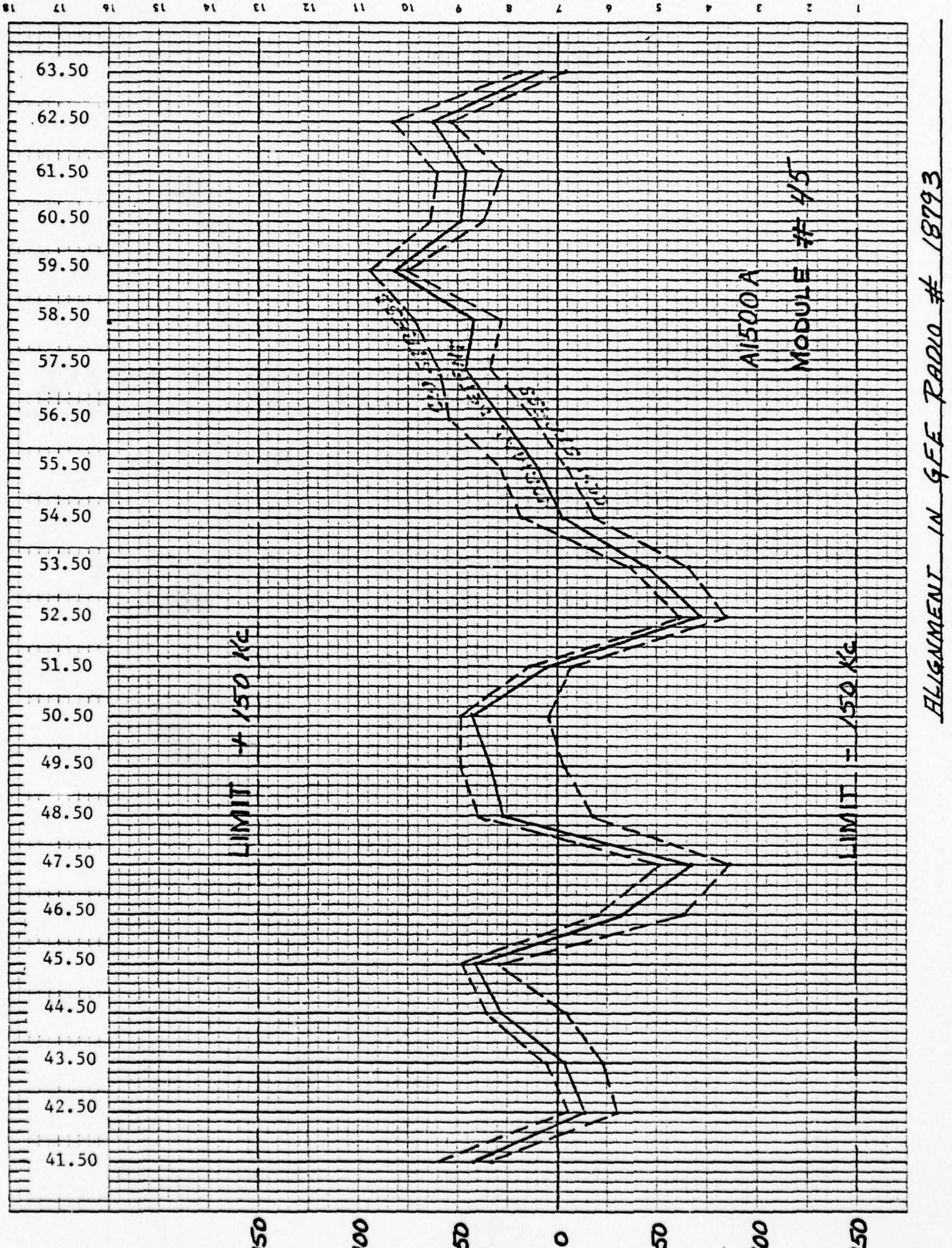
A1500A - MODULES # 40, 44, 45, & 46

RADIO LEVEL DATA -

NORMAL DETENT, CLOCKWISE STRESS &
COUNTER CLOCKWISE STRESS

ALIGNED & TESTED IN GFE RADIO
18793

(4)


ALIGNMENT IN GFE RADIO # 18793
A1500 A
MODULE # 45
LIMIT + 150 KC
LIMIT − 150 KC
63.50
62.50
61.50
60.50
59.50
58.50
57.50
56.50
55.50
54.50
53.50
52.50
51.50
50.50
49.50
48.50
47.50
46.50
45.50
44.50
43.50
42.50
41.50
150
100
50
0
50
100
150

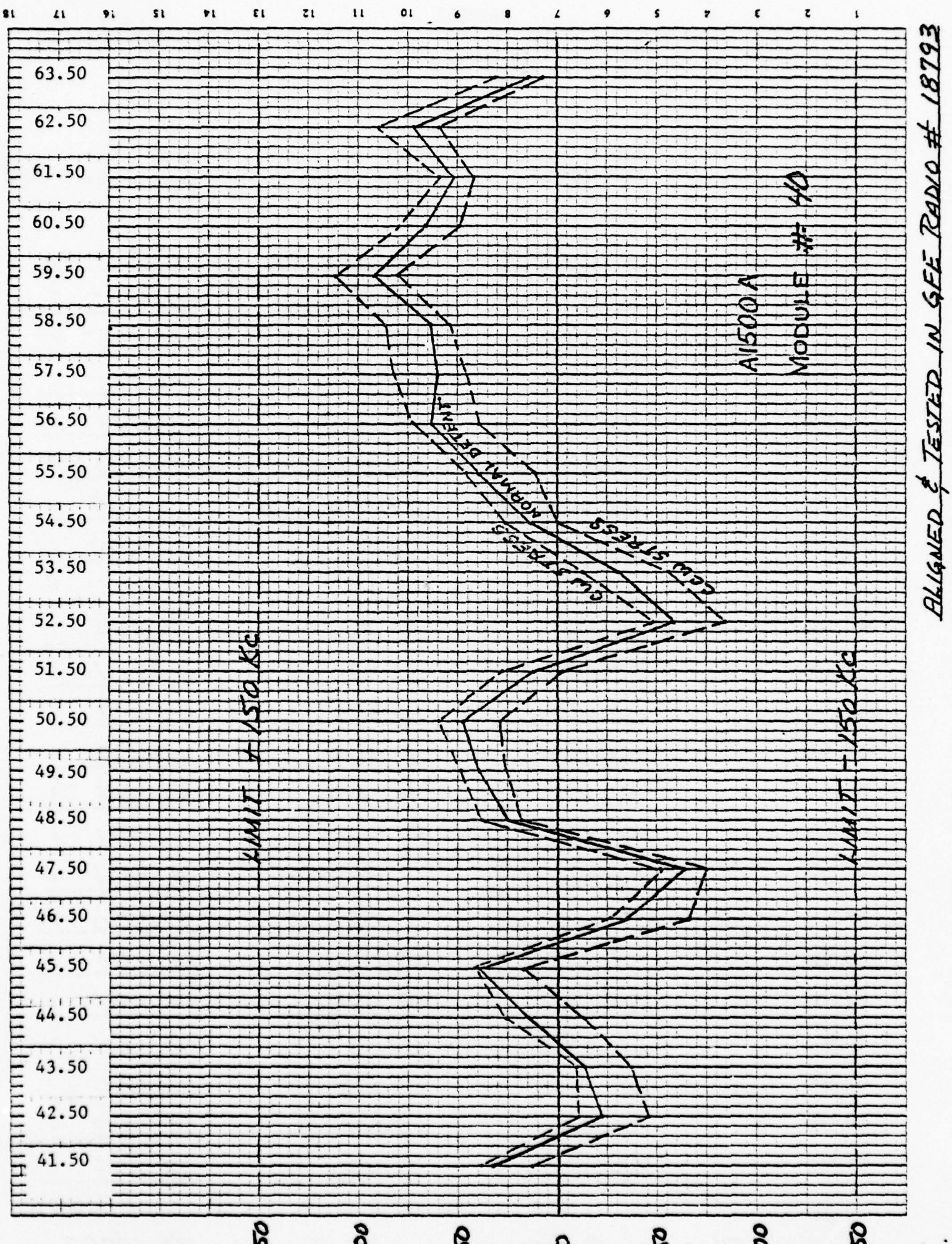
A1500A

In Radio Data

45

Free Running VFO	Actual Frequency ± 150 KC	Gear Train Stress (CCW)	Gear Train Stress (CW)
41.500	41.542 Mc	41.533 Mc	41.560 Mc
42.500	42.486 "	42.470 "	42.495 "
43.500	43.496 "	43.477 "	43.505 "
44.500	44.528 "	44.495 "	44.535 "
45.500	45.540 "	45.529 "	45.547 "
46.500	46.469 "	46.436 "	46.479 "
47.500	47.433 "	47.414 "	47.449 "
48.500	48.527 "	48.483 "	48.539 "
49.500	49.534 "	49.497 "	49.548 "
50.500	50.542 "	50.504 "	50.548 "
51.500	51.506 "	51.493 "	51.514 "
52.500	52.428 "	52.415 "	52.438 "
53.500	53.455 "	53.434 "	53.463 "
54.500	54.498 "	54.482 "	54.517 "
55.500	55.509 "	55.495 "	55.527 "
56.500	56.527 "	56.512 "	56.554 "
57.500	57.546 "	57.534 "	57.560 "
58.500	58.542 "	58.528 "	58.572 "
59.500	59.582 "	59.576 "	59.594 "
60.500	60.548 "	60.537 "	60.564 "
61.500	61.546 "	61.528 "	61.561 "
62.500	62.563 "	62.553 "	62.582 "
63.500	63.508 "	63.496 "	63.579 "

Comments: ALIGNED & TESTED IN GFE RADIO # 18793


63.50
62.50
61.50
60.50
59.50
58.50
57.50
56.50
55.50
54.50
53.50
52.50
51.50
50.50
49.50
48.50
47.50
46.50
45.50
44.50
43.50
42.50
41.50
LIMIT + 150 KC
LIMIT - 150 KC
NORMAL DETENT
CW STRESS
CCW STRESS
A1500 A
MODULE # 40
ALIGNED & TESTED IN GFE RADIO # 18793
150
100
50
0
50
100
150

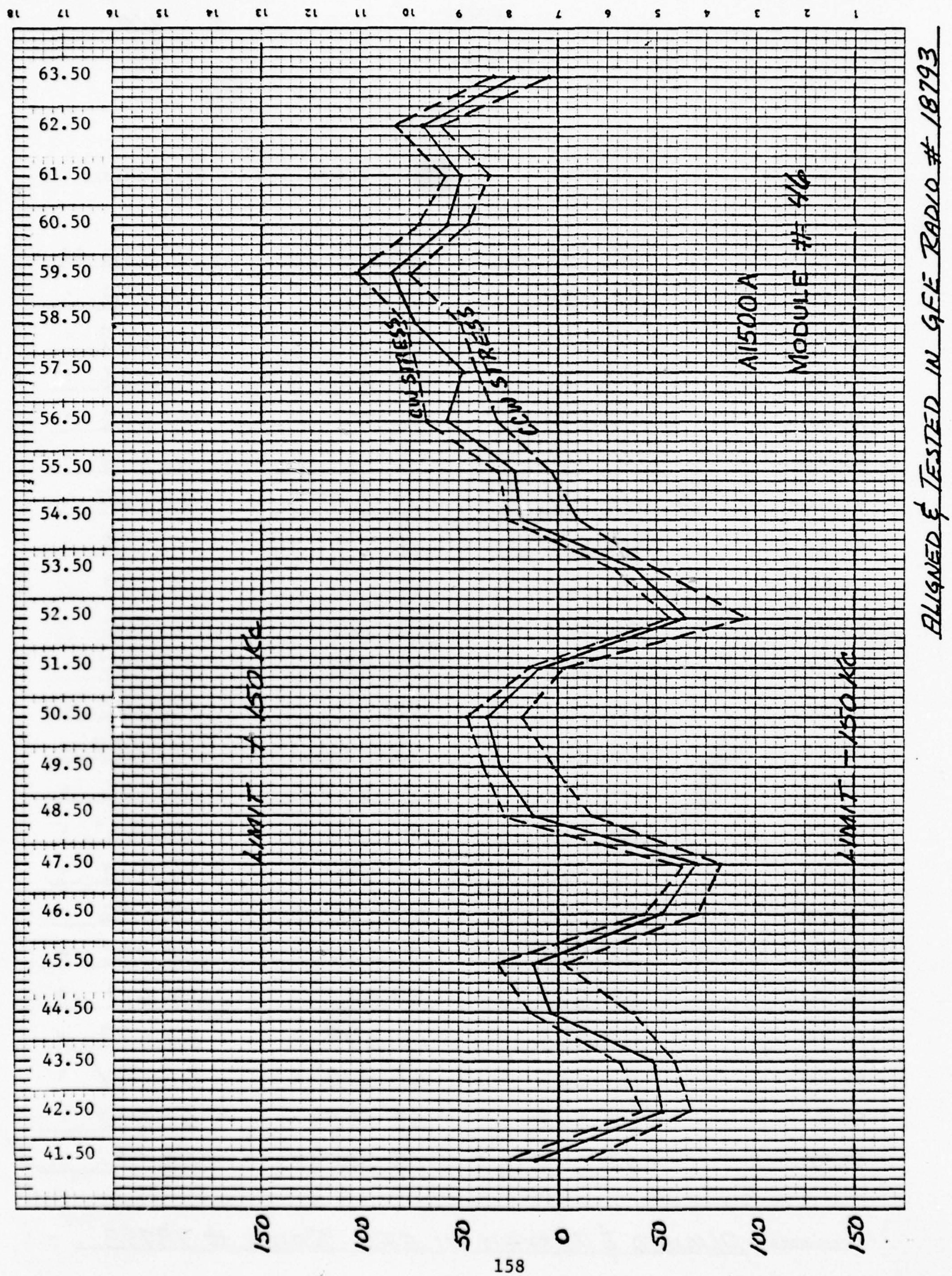
A1500A

40

In Radio Data

Free Running VFO	Actual Frequency ± 150 KC	Gear Train Stress (CCW)	Gear Train Stress (CW)
41.500	41.532 Mc	41.513 Mc	41.538 Mc
42.500	42.478 "	42.454 "	42.489 "
43.500	43.486 "	43.463 "	43.489 "
44.500	44.515 "	44.487 "	44.526 "
45.500	45.539 "	45.517 "	45.542 "
46.500	46.465 "	46.434 "	46.473 "
47.500	47.436 "	47.425 "	47.448 "
48.500	48.524 "	48.519 "	48.538 "
49.500	49.540 "	49.526 "	49.549 "
50.500	50.547 "	50.528 "	50.560 "
51.500	51.512 "	51.498 "	51.527 "
52.500	52.441 "	52.415 "	52.452 "
53.500	53.470 "	53.444 "	53.487 "
54.500	54.514 "	54.500 "	54.526 "
55.500	55.539 "	55.511 "	55.545 "
56.500	56.563 "	56.539 "	56.572 "
57.500	57.560 "	57.546 "	57.582 "
58.500	58.564 "	58.554 "	58.586 "
59.500	59.592 "	59.580 "	59.611 "
60.500	60.566 "	60.549 "	60.579 "
61.500	61.552 "	61.542 "	61.564 "
62.500	62.572 "	62.560 "	62.590 "
63.500	63.515 "	63.507 "	63.531 "

Comments: ALIGNED & TESTED IN GFE RADIO # 18793



ALIGNED & TESTED IN GFE RADIO # 18793
A1500 A
MODULE # 46
LIMIT +150 KC
LIMIT -150 KC
CW STRESS
CCW STRESS
63.50
62.50
61.50
60.50
59.50
58.50
57.50
56.50
55.50
54.50
53.50
52.50
51.50
50.50
49.50
48.50
47.50
46.50
45.50
44.50
43.50
42.50
41.50
150
100
50
0
50
100
150

A1500A

\# 46

In Radio Data

Free Running VFO	Actual Frequency ± 150 KC	Gear Train Stress (CCW)	Gear Train Stress (CW)
41.500	41.511 Mc	41.486 Mc	41.524 Mc
42.500	42.448 "	42.433 "	42.458 "
43.500	43.457 "	43.441 "	43.469 "
44.500	44.504 "	44.462 "	44.514 "
45.500	45.513 "	45.497 "	45.530 "
46.500	46.447 "	46.429 "	46.456 "
47.500	47.429 "	47.418 "	47.437 "
48.500	48.513 "	48.483 "	48.527 "
49.500	49.529 "	49.502 "	49.538 "
50.500	50.536 "	50.518 "	50.546 "
51.500	51.509 "	51.497 "	51.514 "
52.500	52.436 "	52.409 "	52.444 "
53.500	53.467 "	53.450 "	53.471 "
54.500	54.518 "	54.490 "	54.525 "
55.500	55.522 "	55.504 "	55.530 "
56.500	56.556 "	56.531 "	56.566 "
57.500	57.548 "	57.541 "	57.571 "
58.500	58.573 "	58.549 "	58.577 "
59.500	59.584 "	59.575 "	59.601 "
60.500	60.556 "	60.546 "	60.570 "
61.500	61.549 "	61.535 "	61.557 "
62.500	62.569 "	62.559 "	62.582 "
63.500	63.523 "	63.505 "	63.532 "

Comments: ALIGNED & TESTED IN GFE RADIO # 18793

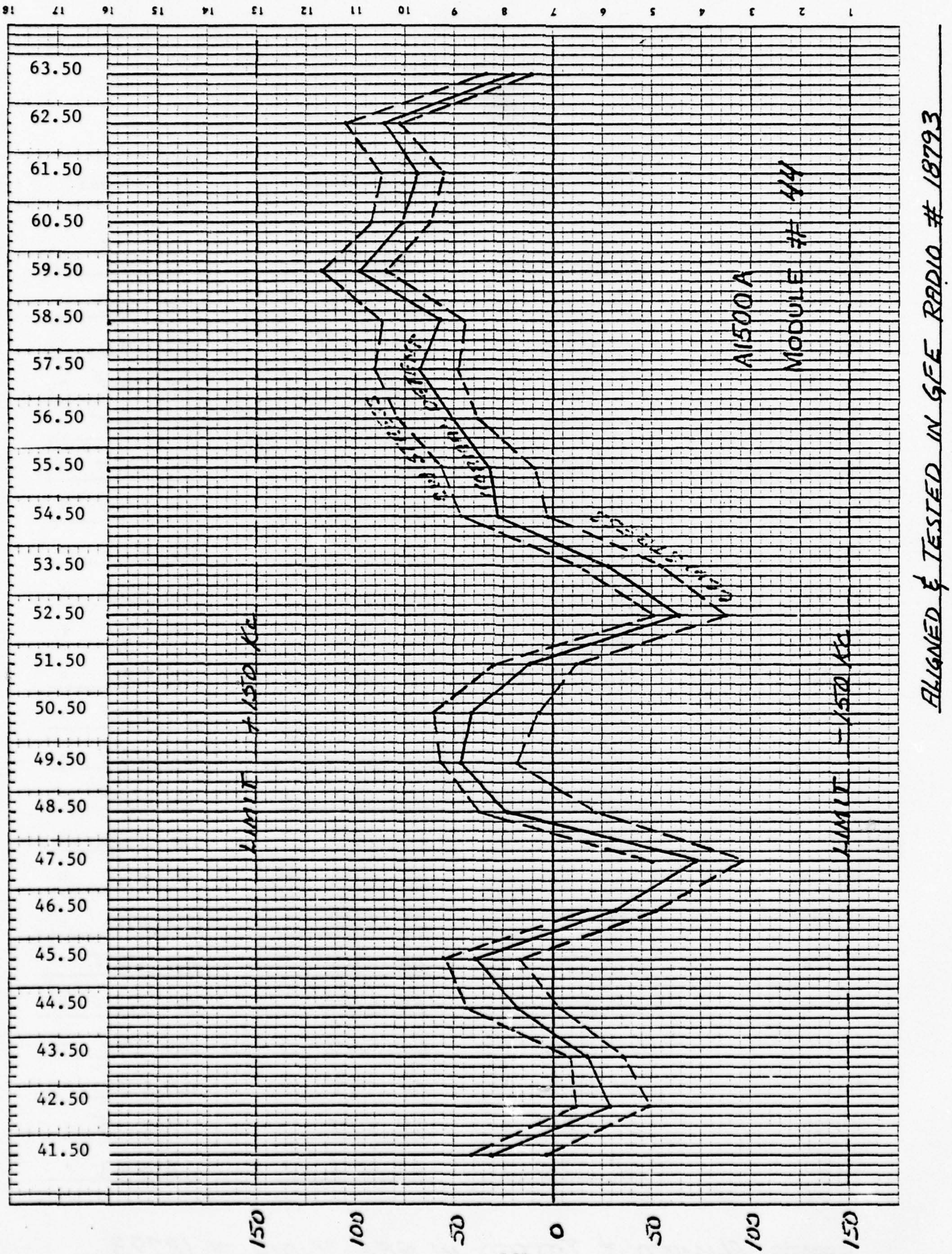
A1500A

In Radio Data

46

Free Running VFO	Actual Frequency ± 150 KC	CRS Output W/RADIO A1400	Mixer Output W/DUMMY BOARD
41.500	41.511 Mc	430 mv	160 mv
42.500	42.448 "	440 "	162 "
43.500	43.457 "	449 "	165 "
44.500	44.504 "	450 "	169 "
45.500	45.513 "	455 "	172 "
46.500	46.447 "	455 "	174 "
47.500	47.429 "	470 "	175 "
48.500	48.513 "	475 "	175 "
49.500	49.529 "	480 "	174 "
50.500	50.536 "	485 "	172 "
51.500	51.509 "	490 "	169 "
52.500	52.436 "	495 "	165 "
53.500	53.467 "	500 "	161 "
54.500	54.518 "	500 "	157 "
55.500	55.522 "	500 "	154 "
56.500	56.556 "	500 "	150 "
57.500	57.548 "	495 "	147 "
58.500	58.573 "	490 "	145 "
59.500	59.584 "	485 "	142 "
60.500	60.556 "	480 "	140 "
61.500	61.549 "	475 "	138 "
62.500	62.569 "	465 "	135 "
63.500	63.523 "	460 "	134 "

Comments: BOARD USED FOR MIXER OUTPUT SIMULATES GOV'T GAGE



63.50
62.50
61.50
60.50
59.50
58.50
57.50
56.50
55.50
54.50
53.50
52.50
51.50
50.50
49.50
48.50
47.50
46.50
45.50
44.50
43.50
42.50
41.50
LIMIT +150 KC
LIMIT -150 KC
A1500A
MODULE # 44
ALIGNED & TESTED IN GFE RADIO # 18793
150
100
50
0
50
100
150

A1500A

\# 44

In Radio Data

Free Running VFO	Actual Frequency ± 150 KC	Gear Train Stress (CCW)	Gear Train Stress (CW)
41.500	41.531 Mc	41.513 Mc	41.541 Mc
42.500	42.471 "	42.451 "	42.488 "
43.500	43.483 "	43.464 "	43.490 "
44.500	44.518 "	44.496 "	44.544 "
45.500	45.539 "	45.516 "	45.555 "
46.500	46.468 "	46.448 "	46.482 "
47.500	47.427 "	47.404 "	47.450 "
48.500	48.523 "	48.478 "	48.537 "
49.500	49.546 "	49.518 "	49.556 "
50.500	50.541 "	50.506 "	50.561 "
51.500	51.512 "	51.488 "	51.529 "
52.500	52.437 "	52.413 "	52.454 "
53.500	53.472 "	53.445 "	53.487 "
54.500	54.527 "	54.502 "	54.547 "
55.500	55.532 "	55.509 "	55.556 "
56.500	56.550 "	56.538 "	56.578 "
57.500	57.567 "	57.548 "	57.590 "
58.500	58.556 "	58.545 "	58.587 "
59.500	59.598 "	59.584 "	59.617 "
60.500	60.576 "	60.562 "	60.591 "
61.500	61.569 "	61.555 "	61.581 "
62.500	62.585 "	62.577 "	62.605 "
63.500	63.520 "	63.571 "	63.533 "

Comments: ALIGNED & TESTED IN GFE RADIO # 18793

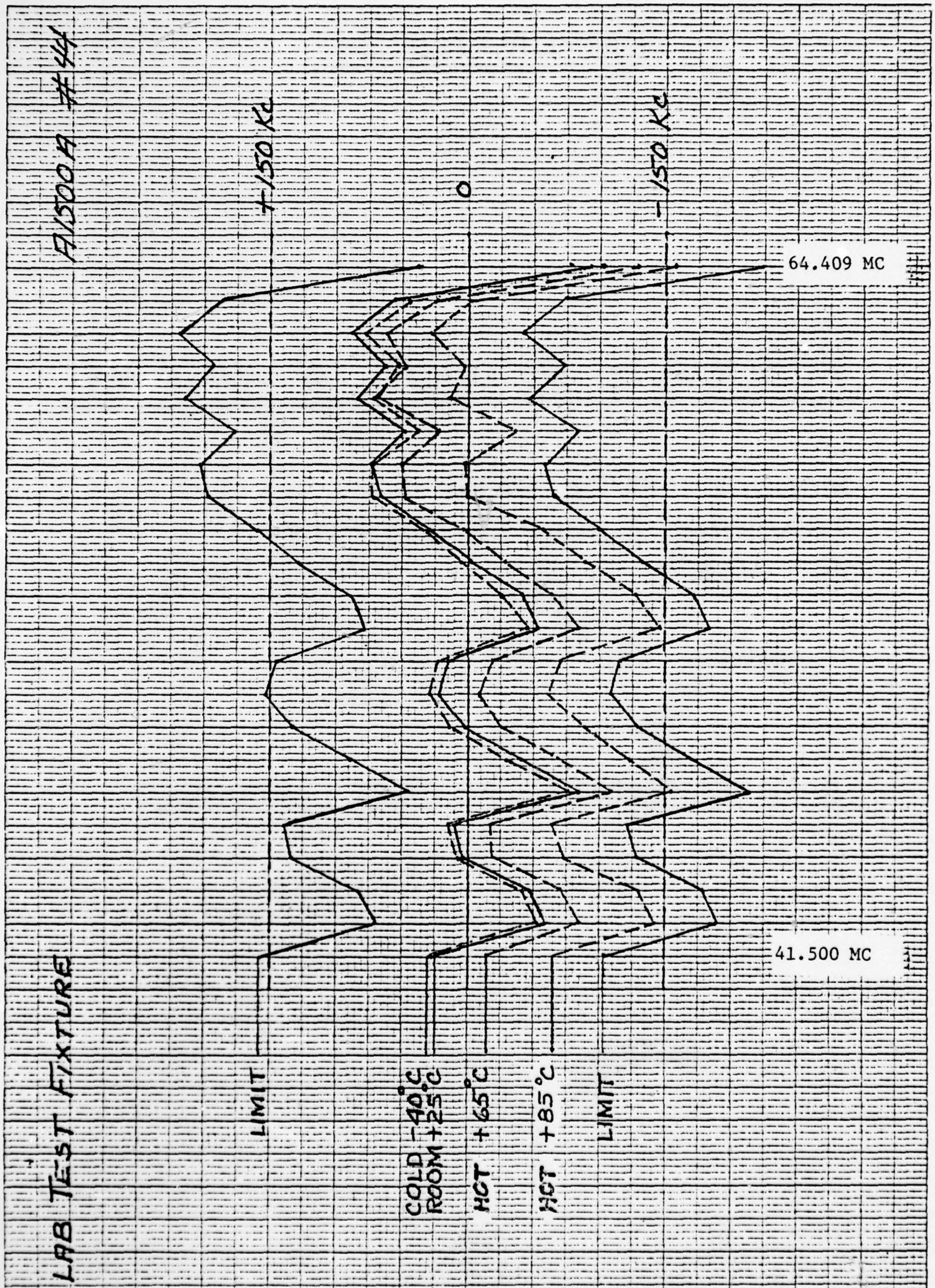
TEMPERATURE

A1500A - MODULE # 44 & 45

MODULE LEVEL DATA -
TRACKING & BUFFER OUTPUTS
@ +25°C, +65°C, +85°C, -40°C

DATA TAKEN ON LAB TEST FIXTURE

5



LAB TEST FIXTURE
A1500A #44
+150 Kc
0
-150 Kc
64.409 MC
41.500 MC
LIMIT
COLD -40°C
ROOM +25°C
HOT +65°C
HOT +85°C
LIMIT

#44

A1500A

@ +25°C

Calculated Straight Line Frequency	Actual Frequency ± 150 KC	CRS Output	Mixer Output
41.500	41.527 Mc	405 mv	1.220 v
42.591	42.532 "	415 "	1.150 "
43.682	43.635 "	425 "	1.075 "
44.773	44.776 "	440 "	1.050 "
45.864	45.873 "	450 "	1.000 "
46.955	46.870 "	465 "	.975 "
48.045	48.005 "	475 "	.925 "
49.136	49.138 "	480 "	.910 "
50.227	50.249 "	485 "	.900 "
51.318	51.333 "	490 "	.875 "
52.409	52.356 "	495 "	.875 "
53.500	53.459 "	495 "	.875 "
54.591	54.589 "	495 "	.875 "
55.682	55.712 "	490 "	.875 "
56.773	56.839 "	485 "	.875 "
57.864	57.937 "	475 "	.875 "
58.995	59.042 "	470 "	.875 "
60.045	60.129 "	460 "	.890 "
61.136	61.199 "	450 "	.895 "
62.227	62.316 "	440 "	.900 "
63.318	63.374 "	430 "	.925 "
64.409	64.316 "	415 "	.950 "

ALIGNMENT & TESTING ON LAB TEST FIXTURE

44

A1500A

@ +65°C

Calculated Straight Line Frequency	Actual Frequency ± 150 KC	CRS Output	Mixer Output
41.500	41.486 Mc	390 mv	1.175 v
42.591	42.506 "	400 "	1.125 "
43.682	43.612 "	410 "	1.050 "
44.773	44.756 "	420 "	1.000 "
45.864	45.848 "	435 "	.975 "
46.955	46.846 "	445 "	.975 "
48.045	47.977 "	455 "	.960 "
49.136	49.112 "	465 "	.940 "
50.227	50.219 "	465 "	.910 "
51.318	51.301 "	470 "	.890 "
52.409	52.324 "	470 "	.875 "
53.500	53.434 "	465 "	.860 "
54.591	54.564 "	465 "	.850 "
55.682	55.686 "	465 "	.850 "
56.773	56.822 "	455 "	.850 "
57.864	57.914 "	450 "	.850 "
58.995	59.017 "	445 "	.850 "
60.045	60.115 "	435 "	.850 "
61.136	61.188 "	425 "	.875 "
62.227	62.307 "	415 "	.875 "
63.318	63.363 "	405 "	.910 "
64.409	64.307 "	395 "	.925 "

#44

A1500A

@ +85°C

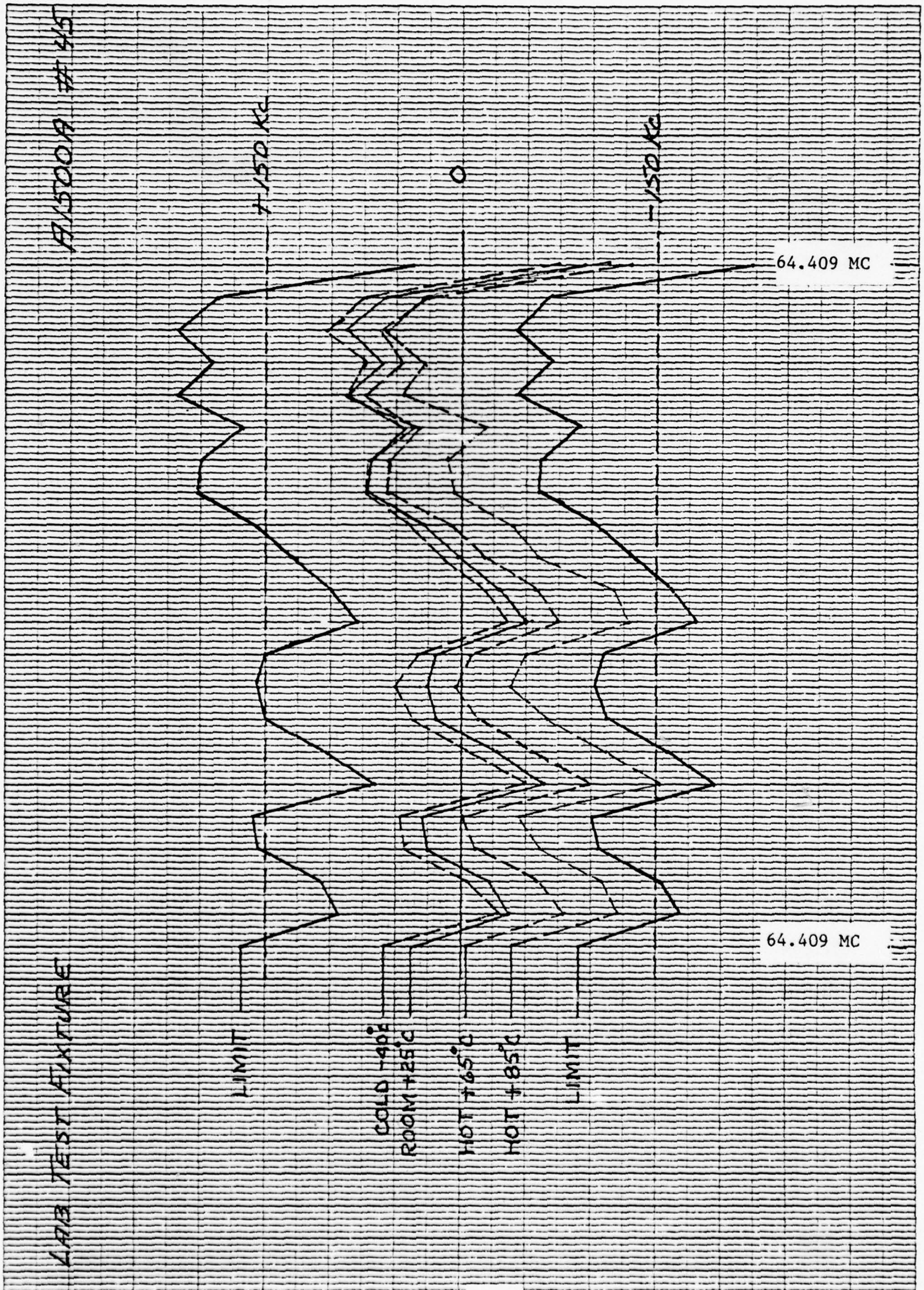
Calculated Straight Line Frequency	Actual Frequency ± 150 KC	CRS Output	Mixer Output
41.500	41.435 Mc	385 mv	1.175 v
42.591	42.449 "	395 "	1.110 "
43.682	43.552 "	410 "	1.050 "
44.773	44.699 "	420 "	1.000 "
45.864	45.799 "	430 "	.975 "
46.955	46.800 "	440 "	.940 "
48.045	47.922 "	450 "	.925 "
49.136	49.048 "	460 "	.900 "
50.227	50.166 "	465 "	.875 "
51.318	51.247 "	470 "	.875 "
52.409	52.263 "	470 "	.875 "
53.500	53.373 "	465 "	.850 "
54.591	54.502 "	465 "	.850 "
55.682	55.624 "	465 "	.850 "
56.773	56.774 "	455 "	.850 "
57.864	57.866 "	450 "	.860 "
58.995	58.959 "	445 "	.860 "
60.045	60.060 "	435 "	.875 "
61.136	61.138 "	425 "	.875 "
62.227	62.254 "	415 "	.880 "
63.318	63.318 "	400 "	.910 "
64.409	64.253 "	390 "	.925 "

#44

A1500A

@-40°C

Calculated Straight Line Frequency	Actual Frequency ± 150 KC	CRS Output	Mixer Output
41.500	41.529 Mc	380 mv	1.200 v
42.591	42.535 "	390 "	1.150 "
43.682	43.639 "	405 "	1.100 "
44.773	44.781 "	420 "	1.050 "
45.864	45.878 "	430 "	.975 "
46.955	46.877 "	440 "	.950 "
48.045	48.015 "	450 "	.925 "
49.136	49.151 "	460 "	.900 "
50.227	50.256 "	465 "	.875 "
51.318	51.340 "	470 "	.875 "
52.409	52.363 "	475 "	.850 "
53.500	53.474 "	475 "	.850 "
54.591	54.596 "	475 "	.850 "
55.682	55.712 "	470 "	.850 "
56.773	56.844 "	460 "	.850 "
57.864	57.936 "	460 "	.850 "
58.995	59.032 "	450 "	.850 "
60.045	60.117 "	445 "	.850 "
61.136	61.182 "	435 "	.850 "
62.227	62.290 "	425 "	.875 "
63.318	63.342 "	415 "	.900 "
64.409	64.280 "	405 "	.910 "


LAB TEST FIXTURE
A/500A #45
+150 KC
0
-150 KC
64.409 MC
64.409 MC
LIMIT
COLD -40°C
ROOM +25°C
HOT +65°C
HOT +85°C
LIMIT

45

A1500A @ +25°C

Calculated Straight Line Frequency	Actual Frequency ± 150 KC	CRS Output	Mixer Output
41.500	41.538 Mc	390 mv	1.175 v
42.591	42.535 "	400 "	1.110 "
43.682	43.659 "	415 "	1.050 "
44.773	44.798 "	425 "	1.000 "
45.864	45.893 "	440 "	.975 "
46.955	46.890 "	450 "	.940 "
48.045	48.018 "	460 "	.910 "
49.136	49.155 "	465 "	.900 "
50.227	50.253 "	470 "	.875 "
51.318	51.338 "	475 "	.860 "
52.409	52.359 "	480 "	.850 "
53.500	53.470 "	480 "	.850 "
54.591	54.592 "	475 "	.850 "
55.682	55.710 "	470 "	.850 "
56.773	56.845 "	465 "	.850 "
57.864	57.934 "	460 "	.850 "
58.995	59.034 "	450 "	.875 "
60.045	60.132 "	440 "	.875 "
61.136	61.197 "	425 "	.875 "
62.227	62.315 "	415 "	.900 "
63.318	63.377 "	405 "	.925 "
64.409	64.316 "	390 "	.950 "

ALIGNMENT & TESTING ON LAB TEST FIXTURE

#45

@ +65°C

A1500A

Calculated Straight Line Frequency	Actual Frequency ± 150 KC	CRS Output	Mixer Output
41.500	41.496 Mc	355 mv	1.100 v
42.591	42.512 "	365 "	1.050 "
43.682	43.624 "	380 "	.975 "
44.773	44.762 "	390 "	.925 "
45.864	45.863 "	405 "	.900 "
46.955	46.856 "	415 "	.875 "
48.045	47.990 "	420 "	.850 "
49.136	49.122 "	430 "	.825 "
50.227	50.231 "	435 "	.800 "
51.318	51.311 "	435 "	.800 "
52.409	52.334 "	435 "	.775 "
53.500	53.443 "	435 "	.775 "
54.591	54.573 "	435 "	.775 "
55.682	55.691 "	430 "	.775 "
56.773	56.832 "	425 "	.775 "
57.864	57.922 "	415 "	.775 "
58.995	59.028 "	405 "	.775 "
60.045	60.132 "	395 "	.785 "
61.136	61.211 "	385 "	.800 "
62.227	62.330 "	370 "	.810 "
63.318	63.391 "	360 "	.840 "
64.409	64.334 "	345 "	.850 "

#45

A1500A

@ +85°C

Calculated Straight Line Frequency	Actual Frequency ± 150 KC	CRS Output	Mixer Output
41.500	41.461 Mc	330 mv	1.075 v
42.591	42.470 "	335 "	1.010 "
43.682	43.575 "	345 "	.975 "
44.773	44.712 "	355 "	.910 "
45.864	45.819 "	370 "	.875 "
46.955	46.802 "	380 "	.850 "
48.045	47.934 "	385 "	.840 "
49.136	49.070 "	395 "	.810 "
50.227	50.190 "	400 "	.800 "
51.318	51.268 "	400 "	.780 "
52.409	52.280 "	400 "	.780 "
53.500	53.383 "	400 "	.775 "
54.591	54.532 "	400 "	.775 "
55.682	55.643 "	395 "	.775 "
56.773	56.779 "	390 "	.775 "
57.864	57.874 "	380 "	.775 "
58.995	58.977 "	375 "	.775 "
60.045	59.090 "	360 "	.790 "
61.136	60.165 "	350 "	.800 "
62.227	61.285 "	335 "	.825 "
63.318	62.346 "	325 "	.840 "
64.409	63.294 "	315 "	.850 "

\# 45

A1500A @ -40° C

Calculated Straight Line Frequency	Actual Frequency ± 150 KC	CRS Output	Mixer Output
41.500	41.559 Mc	400 mv	1.125 v
42.591	42.563 "	410 "	1.075
43.682	43.677 "	420 "	1.000
44.773	44.816 "	435 "	.950
45.864	45.910 "	445 "	.900
46.955	46.906 "	455 "	.875
48.045	48.038 "	465 "	.850
49.136	49.173 "	470 "	.825
50.227	50.278 "	475 "	.800
51.318	51.350 "	480 "	.800
52.409	52.374 "	480 "	.800
53.500	53.483 "	480 "	.800
54.591	54.606 "	480 "	.800
55.682	55.721 "	480 "	.790
56.773	56.846 "	470 "	.790
57.864	57.935 "	465 "	.800
58.995	59.032 "	455 "	.800
60.045	60.119 "	445 "	.825
61.136	61.182 "	435 "	.825
62.227	62.289 "	420 "	.850
63.318	63.343 "	410 "	.875
64.409	64.279 "	400 "	.900

TEST: A1600A Module Performance	SPEC: SM-B-416432	PAR: 2.2	TEST NO:
TEST CONDITIONS:			DATE:
MATERIAL: MODIFIED A1600 MODULES			TEMP: Ambient RH:
MANUFACTURER: E-SYSTEMS, INC., MEMCOR DIVISION			M. NO:
INSTRUMENTS: Precision Power Source Calibrated 12-23-75 NJE Power Supply Model RVL-36-15 Calibrated 2-20-76 8000A Digital Voltmeter Calibrated 4-16-76 184A Oscilloscope Calibrated 3-1-76			TESTED BY: S. Shastri LAB.SUP.CHECK ENGRG. CHECK:

UNIT NO	INPUT VOLTAGE VOLTS	INPUT CURRENT mA	INPUT POWER WATTS	OUTPUT VOLTAGE VOLTS	OUTPUT CURRENT mA	OUTPUT POWER WATT	EFFICIENCY %	FREQ KHz	REGULATION 22 - 30 VOLTS	
LIMITS	-	-	-	105/115V	-	-	-	-	70V Min.	
1	25.5	118	3.0	108.3	17.75	1.92	64	10.6	93.5	127.5
2	25.5	120	3.06	107	17.54	1.88	61.5	10.9	92.9	126.
3	25.5	122	3.11	107.5	17.62	1.89	60.7	10.9	92.9	126.
4	25.5	125	3.19	109.3	17.92	1.96	61.4	10.4	94.5	128.3
5	25.5	123	3.14	107.3	17.59	1.89	60.2	10.4	93.1	126.
6	25.5	121	3.09	106.6	17.47	1.86	60.0	10.9	92.2	124.
7	25.5	122	3.11	108.5	17.78	1.95	62.0	10.6	94.2	127.6
8	25.5	117	2.98	106.8	17.5	1.87	62.7	10.6	92.5	125.
9	25.5	123	3.14	108.8	12.83	1.94	61.8	10.9	94.1	127.
10	25.5	116	2.96	105.0	17.21	1.80	60.1	10.4	90.2	121.9
									21V -	29V
1	25	127	3.175	111.2	18.23	2.027	64.0	10.8	93.0	129.3
2	25	128	3.200	110.7	18.15	2.009	62.7	10.6	92.7	128.5
3	25	129	3.225	111.2	18.23	2.027	62.8	11.1	93.3	129.0
4	25	127	3.175	111.3	18.25	2.031	63.9	10.6	93.3	129.2
5	25	129	3.225	110.5	18.11	2.001	62.0	10.4	92.6	128.2
6	25	129	3.225	109.8	18.00	1.976	61.2	10.4	92.1	127.6
7	25	130	3.250	112.5	18.44	2.074	63.8	11.1	94.3	130.4
8	25	128	3.200	110.5	18.11	2.001	62.5	10.8	92.6	128.0
9	25	131	3.275	111.8	18.33	2.049	62.5	10.6	93.8	129.8
10	25	121	3.025	110.2	18.07	1.990	65.7	10.8	92.3	127.6

TEST: A2000A Module Output	SPEC: SM-B-414818	PARA: See Below	TEST NO:
TEST CONDITIONS: Paragraph 3 and 4 of SM-B-414818			DATE: 11-12-76
MATERIAL: New Crystal Switch Production Modules			TEMP: Ambient RH:
MANUFACTURER: E-Systems Inc., Memcor Division			M. NO:
INSTRUMENTS: HP6205B Power Supply Boonton 92B RF Millivoltmeter HP5328A Freq. Counter HP461A Amplifier			TESTED BY: K.P. Yelton LAB. SUP. CHECK ENGRG. CHECK

UNIT NO.	Interpolation Oscillator		Reference Oscillator			
	Frequency Deviation	Output (mV)	5.6 MHz		5.65 MHz	
	Δf (Hz) ± 2300 Hz	400 mV (MIN)	Δf (Hz) ± 270 Hz	Output 300 mV (MIN)	Δf (Hz) ± 270 Hz	Output 300 mV (MIN)
1	+508	550	+93	740	+7	680
2	-265	620	+126	820	+8	835
3	-600	530	-210	670	+5	625
4	+96	600	+1	690	+14	630
5	+411	620	-23	625	+9	585
6	+158	580	+126	690	+5	640
7	-475	575	+52	650	+10	610

NOTE: The above data was taken with the module set at the 47.350 MHz crystal position. Δf is the deviation from that frequency setting.

TEST: A2100 Module Performance	SPEC: SM-D-414157	PARA:	TEST NO:
TEST CONDITIONS:			DATE: 3-17-76
MATERIAL: Voltage Regulator Assembly and Output Transistor			TEMP: Ambient RH:
MANUFACTURER: E-Systems, Inc., Memcor Division			M. NO:
INSTRUMENTS: 6291A HP DC Power Supply 6205B Dual DC Power Supply R5103N Tektronix Oscilloscope 3400 Data Precision Digital Voltmeter			TESTED BY: S. Shastri LAB. SUP. CHECK ENGRG. CHECK

Module: A2100A Output Transistor: 2N5868

	Output Voltage in Volts						Delay Time in Seconds
Load Condition	100 mA			250 mA			
Input Voltage	20 V	25.5 V	30 V	20 V	25.5 V	30 V	
Unit / Limits	15.8 - 16.2 Volts						0.5 - 1.0
1	15.98	15.99	16.00	15.97	15.98	15.00	0.85
2	15.98	15.99	16.00	15.96	15.98	15.99	0.95
3	15.99	15.99	16.01	15.97	15.99	16.00	0.75
4	15.99	16.00	16.01	15.98	15.99	16.00	0.84
5	15.99	16.00	16.00	15.97	15.98	15.99	0.78
6	15.97	15.99	16.00	15.96	15.98	15.99	0.94
7	16.01	16.02	16.02	15.99	16.01	16.01	0.80
8	15.98	15.99	16.00	15.97	15.98	15.99	0.85
9	16.02	16.03	16.03	16.01	16.02	16.03	0.84
10	15.98	15.99	15.99	15.96	15.97	15.98	0.86

TEST: A3100 MODULE PERFORMANCE	SPEC: SC-A-400351 C	PAR: SEE BELOW	TEST NO:
TEST CONDITIONS: TESTED ON NR323841-1			DATE: 11-1-76
MATERIAL: NORMAL PRODUCTION MODULES			TEMP: RH:
MANUFACTURER:			M. NO:

INSTRUMENTS:		TESTED BY: T. Phillips
Type 335 Tektronic Oscilloscope Calib	8-16-76	LAB.SUP.CHECK
Type 2006 B & K Hetrodyne Voltmeter	8-23-76	
HP 5381A Frequency Counter	10-1-76	ENGRG. CHECK:
NR 323841-1 Government	5-13-76	

	Starting Time Para 8.2 100 Milli Sec MAX	Frequency Para 8.3 1 MHz ± 51 cps	OUTPUT VOLTAGE LEVEL (VRMS) 35 mV MIN			23.5 mV			MINIMUM			PARA 8.4		
			TEST FREQUENCY MHz											
			1	2	3	4	5	6	7	8	9	10	11	12
NR1	66	1,000,002	48	50	49	47	44	39	36	33	33	35	32	31
			NORMAL PRODUCTION MODULES											
1	54	1,000,008	48	47	48	47	43	39	36	34	32	34	29	27
2	42	999,993	47	46	47	47	44	41	38	34	33	33	29	29
3	50	999,997	46	46	46	46	42	39	36	33	32	33	30	28
4	52	999,986	41	42	41	41	37	34	32	29	28	30	27	26
5	50	999,990	48	49	48	47	41	40	37	34	33	34	30	29
6	50	999,999	49	49	47	48	44	41	37	34	33	34	31	30
7	48	999,983	50	50	49	48	46	40	37	33	32	33	31	31
8	48	999,982	52	52	52	52	46	42	39	36	34	34	31	31
9	46	1,000,004	48	49	48	49	46	42	39	36	34	35	32	32
10	54	999,993	46	48	47	47	44	40	37	34	33	34	30	28
AVG	49.4	999,944	47.5	47.8	47.3	47.2	43.3	39.8	36.8	33.7	32.4	33.4	30.0	29.1
		SAME MODULES MODIFIED PER THIS ECP												
1	26	1,000,002	54	54	54	54	53	47	41	37	36	37	32	29
2	22	999,989	55	55	55	54	53	48	43	39	37	37	32	31
3	25	999,992	53	54	53	53	52	45	40	37	35	36	32	31
4	26	999,978	50	56	54	53	50	43	58	35	34	36	32	31
5	26	999,994	52	53	54	53	52	42	37	34	32	33	29	28
6	30	999,996	52	52	52	50	48	42	37	34	32	33	30	29
7	28	999,977	51	52	50	50	48	43	38	34	33	34	31	30
8	28	999,976	54	54	53	52	52	47	41	37	34	35	31	30
9	28	999,999	53	53	52	53	51	46	41	37	35	36	32	31
10	32	1,000,002	51	52	52	51	46	40	36	33	33	35	32	31
AVG	27.1	999,990.5	52.5	53.5	52.9	52.3	50.5	44.3	39.2	35.7	34.1	35.2	31.3	30.1

Seven modules were examined. Those modules are in the new A3200A configuration.

Using Control Std #1:

Harmonic Oscillator Position = -55.5 dB
5 Mc Oscillator Position = -56.5 dB

Freq. (MHz)	Output Indication (dB)						
41	-67	-67	-68	-67	-64	-67	-68
42	-66	-65.5	-66	-65	-62.5	-66	-66
43	-64	-64	-65	-64	-62	-64	-65
44	-63	-62.5	-63	-62.5	-60	-63	-63.5
45	-62	-61	-62	-61.5	-59	-62	-62
46	-61	-60.5	-61	-61	-58	-61	-62
47	-60	-59	-60	-59.5	-56.5	-60.5	-61
48	-60	-58	-59.5	-58	-55.5	-59.5	-60
49	-58.5	-57.5	-59	-58	-55	-58.5	-59
50	-58	-57	-58	-57.5	-55	-57	-58.5
51	-58	-57	-58	-57	-55	-57	-58
52	-57.5	-56.5	-58	-58	-55	-57.5	-58
53	-59	-57.5	-58	-58	-55	-58	-59.5
54	-59	-57	-58	-57	-55	-58	-58
55	-59.5	-57	-58	-57	-55.5	-58	-58
56	-60	-58	-59	-58-	-55.5	-58.5	-59
57	-60.5	-58	-59	-58.5	-56	-59	-59
58	-61	-59	-60	-59	-57	-60	-60
59	-61.5	-60	-61	-60	-57	-61	-61
60	-62	-61	-62	-61	-58	-61.5	-62.0
61	-63	-62	-63	-62	-59	-62	-62.5
62	-63	-63	-64	-64	-60	-64	-64
63	-64	-65	-66	-64.5	-61	-65	-65
64	-65	-66.5	-67	-66	-62	-66.5	-67
65	-70	-70	-69	-68	-64	-68	-68
Mod #	17	18	19	20	23	25	30
Conversion Gain	-9.5	-7.5	-9.0	-7.5	-5.0	-9.0	-9.5
Min-Max dB - Diff	12.5	13	11	11	9	11	10

A3100 2907A
A3200 CA3018
A3300 2N3251A
A3400 2N2907A's
A3500 2N2907A's
A3600 2N2907A
A3700 2N2907A's

SILICONIZED A3000 TRAY AT EXTREME TEMPERATURE

Contract 0135

T. E. Phillips
T. E. Phillips
1-8-77
Unit Serial 16606

7.0 Catching Range

+25.5 VDC INPUT

RF Level - 10 uv

Freq.	Ambient	-40°F	+160°F	Ambient	Limit	Freq.	Ambient	-40°F	+160°F	AMB
30.90	550	550	550	550	250 kc	41.95	550	550	600	550
31.90	400	400	400	450	250 kc	42.95	400	400	400	400
Sum	950	950	950	1000	250 kc	Sum	950	950	1000	950
31.95	600	600	600	600	250 kc	42.90	450	500	450	450
32.95	350	350	350	350	250 kc	43.90	450	450	450	450
Sum	950	950	950	950	350 kc	Sum	900	950	900	900
32.90	500	500	500	450	250 kc	43.95	550	550	550	550
33.90	450	450	500	500	250 kc	44.95	400	400	400	400
Sum	950	950	1000	950	350 kc	Sum	950	950	950	950
33.95	600	550	600	550	250 kc	44.90	400	450	400	400
34.95	400	400	350	400	250 kc	45.90	550	500	550	550
Sum	1000	950	950	950	850 kc	Sum	950	950	950	950
34.90	550	550	550	500	250 kc	45.95	500	500	500	500
35.90	400	400	400	400	250 kc	46.95	450	450	450	450
Sum	950	950	950	900	850 kc	Sum	950	950	950	950
35.95	600	600	650	600	250 kc	46.90	400	450	400	450
36.95	350	350	300	350	250 kc	47.90	550	500	550	550
Sum	950	950	950	950	850 kc	Sum	950	950	950	950
36.90	500	500	500	500	250 kc	47.95	500	500	550	500
37.90	450	450	450	450	250 kc	48.95	450	450	450	450
Sum	950	950	950	950	850 kc	Sum	950	950	1000	950
37.95	600	600	600	600	250 kc	48.90	450	500	450	450
38.95	400	400	350	400	250 kc	49.90	500	500	500	500
Sum	1000	1000	950	1000	850 kc	Sum	950	1000	950	950
38.90	450	500	450	450	250 kc	49.95	500	500	550	500
39.90	450	450	450	450	250 kc	50.95	450	450	450	450
Sum	900	950	900	900	850 kc	Sum	950	950	1000	950
39.95	600	550	600	550	250 kc	50.90	400	400	400	400
40.95	400	400	350	400	250 kc	51.90	600	550	550	550
Sum	1000	950	950	950	850 kc	Sum	1000	950	950	950
40.90	550	550	550	500	250 kc	51.95	550	600	600	600
41.90	400	400	450	450	250 kc	52.95	400	350	350	350
Sum	950	950	1000	950	850 kc	Sum	950	950	950	950

GENERAL DATA SHEET

TEST: A3300A Module Performance	SPEC: SC-A-400349A	PARA: See Below	TEST NO:
TEST CONDITIONS: Tested on Gov. Electrical Gage			DATE: 2-26-77
MATERIAL: With New Artwork & Parts per this ECP			TEMP: RH:
MANUFACTURER: Memcor			M. NO:
INSTRUMENTS: HP 606 RF Generator Calibrated 2-7-77 91 HR RF Voltmeter 2-14-77 1018 Systrom Donner Counter 2-14-77 B&K 2006 Hetrodyne Counter 2-21-77 HP 461A Wide Band Amplifier HR 323841-1 Gov. Electrical Gage			TESTED BY: T. Phillips LAB. SUP. CHECK ENGRG. CHECK

UNIT NO.	Gain at 53.050 MHz Paragraph 8.2.3	Frequency at 53.450 MHz Paragraph 8.3.3	Response at 52.650 MHz Paragraph 8.3.6	RT 22827 S+N/N Paragraph 3.9.8 of MIL-R-55100
	1.8 to 13	(within 4.6 dB of 8.2.3)	(within 4.6 dB of 8.2.3)	45 dB minimum
	mV	dB	dB	dB
21	7.2	0.4	0.6	56.0
22	7.6	0.3	0.3	56.0
23	9.4	0.8	0.4	54.0
24	8.2	0.0	0.5	56.0
25	6.4	0.0	1.0	57.0
26	7.2	0.2	0.3	56.5
27	7.1	0.0	0.7	55.0
28	6.9	0.0	0.6	57.0
29	8.0	0.3	0.3	58.0
30	7.8	0.0	0.6	55.0

GENERAL DATA SHEET

TEST: A3400A SPEC: SC-A-400350 PARA: See Below	TEST NO:
TEST CONDITIONS: Tested on Gove. Elect Gage NR323842-1	DATE: 29 March 1976
MATERIAL: A3400 CRS 1st & 2nd IF built per this ECP	TEMP: RH:
MANUFACTURER: E-Systems, Memcor Division	M. NO:
INSTRUMENTS: HP 606 RF Generator Calibrated 2-7-77 HP 606 RF Generator 3-18-77 Type 2006 B & K Hetrodyne Voltmeter 2-21-77 HP 5616A Frequency Counter 1-20-77 NR-323842-1 Gov Elect Gage 11-12-76	TESTED BY: T. Phillips LAB. SUP. CHECK ENGRG. CHECK

UNIT NO.	GAIN Paragraph 8.3 0.6/1.5	RESPONSE 5.3 MHz Paragraph 8.2	 5.9 MHz Paragraph 8.2	CONVERSION GAIN Paragraph 8.2 21.2/30.9
	Volts RMS	dB	dB	dB
1	1.02	61.4	91.8	30.4
2	1.06	61.3	89.4	28.1
3	1.02	61.4	90	28.6
4	1.00	61.4	90.6	29.2
5	0.98	61.6	90.4	28.8
6	1.02	61.2	90.6	29.4
7	1.06	61.4	90.8	29.4
8	1.04	61.1	91.0	29.9
9	1.02	61.2	90.8	29.6
10	1.02	61.4	91.8	30.4
NR 1	96	61.7	91.8	30.1
NR 2	97	61.8	91.2	29.4

TEST: A3500 Module Performance	SPEC: SC-A-400352	PARA: See Below	TEST NO:
TEST CONDITIONS: Tested on WR 323844-1			DATE: 3-18-77
MATERIAL: A3500A			TEMP: RH:
MANUFACTURER: E-Systems Inc., Memcor Division			M. NO:
INSTRUMENTS: WR 323844-1 Government Furnished Gage Calibrated 12-13-76 Type 2006 Hetrodyne Voltmeter Calibrated 2-21-77 HP 5216A Electronic Counter Calibrated 1-26-77 HP 606B RF Signal Generator Calibrated 2-7-77 HP 606B RF Signal Generator Calibrated 12-7-76 HP 410B VTVM Calibrated 1-5-77			TESTED BY: LAB. SUP. CHECK ENGRG. CHECK T.E. Phillips

UNIT NO.	A3500 MODULES Built per this ECP				
	Oscillations	Para. 8.2 Frequency Response	Para. 8.3 Gain	Para. 8.4 Limiting 1	Para. 8.4 Limiting 2
LIMITS →		21-31 (dB)	0.5 VRMS (MIN)	0.8 - 1.4 VRMS	0.21 - 0.53 VRMS
61	None	25.2	.92	1.04	.38
62	None	25.0	.89	1.00	.35
63	None	25.0	.90	1.02	.36
64	None	25.1	.85	1.00	.36
65	None	25.4	.90	.98	.38
66	None	25.0	.92	.98	.38
67	None	25.0	.93	.98	.37
68	None	25.0	.90	1.05	.40
69	None	25.0	.93	.98	.33
70	None	25.3	.90	.98	.35

ATTACHMENT "D"

With Siliconized A1400A, A1500A, A3100A, A3200A, A3300A
A3400A, A3500A, A3600A & A3700A

RT524
Unit Serial 15797

7.0 Catching Range
Per MIL-R-55100 per 3.9.7
RF Level - 100 uv

Freq.	22.0v	25.5v	30.0v	Limit	Freq.	22.0v	25.5v	30.0v
30.90	500	500	500	250 kc	41.95	600	600	600
31.90	500	500	500	250 kc	42.95	400	400	400
Sum	1000	1000	1000	850 kc	Sum	1000	1000	1000
31.95	550	550	550	250 kc	42.90	450	450	450
32.95	450	450	450	250 kc	43.90	550	550	550
Sum	1000	1000	1000	850 kc	Sum	1000	1000	1000
32.90	500	500	500	250 kc	43.95	450	450	400
33.90	500	500	500	250 kc	44.95	550	550	600
Sum	1000	1000	1000	850 kc	Sum	1000	1000	1000
33.95	500	500	500	250 kc	44.90	350	350	300
34.95	500	500	500	250 kc	45.90	650	650	650
Sum	1000	1000	1000	850 kc	Sum	1000	1000	950
34.90	600	600	600	250 kc	45.95	350	350	350
35.90	350	350	350	250 kc	46.95	650	650	650
Sum	950	950	950	850 kc	Sum	1000	1000	1000
35.95	500	500	500	250 kc	46.90	300	300	300
36.95	500	500	500	250 kc	47.90	700	700	700
Sum	1000	1000	1000	850 kc	Sum	1000	1000	1000
36.90	400	400	400	250 kc	47.95	500	500	500
37.90	550	550	550	250 kc	48.95	550	550	550
Sum	950	950	950	850 kc	Sum	1050	1050	1050
37.95	500	500	450	250 kc	48.90	300	300	300
38.95	550	550	550	250 kc	49.90	650	650	650
Sum	1050	1050	1000	850 kc	Sum	950	950	950
38.90	450	450	450	250 kc	49.95	400	400	350
39.90	550	550	550	250 kc	50.95	650	650	650
Sum	1000	1000	1000	850 kc	Sum	1050	1050	1050
39.95	550	550	550	250 kc	50.90	300	300	300
40.95	450	450	450	250 kc	51.90	750	750	750
Sum	1000	1000	1000	850 kc	Sum	1050	1050	1050
40.90	550	550	550	250 kc	51.95	450	450	[illegible]
41.90	450	450	450	250 kc	52.95	600	600	[illegible]
Sum	1000	1000	1000	850 kc	Sum	1050	1050	[illegible]

ATTACHMENT "E"

SILICONIZED A3000 TRAY AT EXTREME TEMPERATURE

A3100 2907A
A3200 CA3018
A3300 2N3251A
A3400 2N2907A's
A3500 2N2907A's
A3600 2N2907A
A3700 2N2907A's

T. E. Phillips
T. E. Phillips
1-8-77
Unit Serial 16606

7.0 Catching Range

+25.5 VDC INPUT

RF Level - 10 uv

Freq.	Ambient	-40°F	+160°F	Ambient	Limit	Freq.	Ambient	-40°F	+160°F	AMB
30.90	550	550	550	550	250 kc	41.95	550	550	600	550
31.90	400	400	400	450	250 kc	42.95	400	400	400	400
Sum	950	950	950	1000	250 kc	Sum	950	950	1000	950
31.95	600	600	600	600	250 kc	42.90	450	500	450	450
32.95	350	350	350	350	250 kc	43.90	450	450	450	450
Sum	950	950	950	950	850 kc	Sum	900	950	900	900
32.90	500	500	500	450	250 kc	43.95	550	550	550	550
33.90	450	450	500	500	250 kc	44.95	400	400	400	400
Sum	950	950	1000	950	350 kc	Sum	950	950	950	950
33.95	600	550	600	550	250 kc	44.90	400	450	400	400
34.95	400	400	350	400	250 kc	45.90	550	500	550	550
Sum	1000	950	950	950	850 kc	Sum	950	950	950	950
34.90	550	550	550	500	250 kc	45.95	500	500	500	500
35.90	400	400	400	400	250 kc	46.95	450	450	450	450
Sum	950	950	950	900	850 kc	Sum	950	950	950	950
35.95	600	600	650	600	250 kc	46.90	400	450	400	450
36.95	350	350	300	350	250 kc	47.90	550	500	550	550
Sum	950	950	950	950	850 kc	Sum	950	950	950	950
36.90	500	500	500	500	250 kc	47.95	500	500	550	500
37.90	450	450	450	450	250 kc	48.95	450	450	450	450
Sum	950	950	950	950	850 kc	Sum	950	950	1000	950
37.95	600	600	600	600	250 kc	48.90	450	500	450	450
38.95	400	400	350	400	250 kc	49.90	500	500	500	500
Sum	1000	1000	950	1000	850 kc	Sum	950	1000	950	950
38.90	450	500	450	450	250 kc	49.95	500	500	550	500
39.90	450	450	450	450	250 kc	50.95	450	450	450	450
Sum	900	950	900	900	850 kc	Sum	950	950	1000	950
39.95	600	550	600	550	250 kc	50.90	400	400	400	400
40.95	400	400	350	400	250 kc	51.90	600	550	550	550
Sum	1000	950	950	950	850 kc	Sum	1000	950	950	950
40.90	550	550	550	500	250 kc	51.95	550	600	600	600
41.90	400	400	450	450	250 kc	52.95	400	350	350	350
Sum	950	950	1000	950	850 kc	Sum	950	950	950	950

TEST: A3600A Module Performance	SPEC: SC-A-400353A	PAR: See Below	TEST NO:
TEST CONDITIONS: Modules Built Per This ECP			DATE: 11-10-76
MATERIAL:			TEMP: RH:
MANUFACTURER: Memcor			M. NO:
INSTRUMENTS: HP606RF Signal Generator Calib 11-5-76 NR323845-1 Gov Electrical Gage Calib 5-13-76 HP5216A Electronic Counter Calib 10-19-76 HP413A DC Null Meter Calib 9-6-76			TESTED BY: LAB.SUP.CHECK ENGRG. CHECK: T. Phillips

UNIT NO	Frequency Response Characteristic Test Frequency (MHz)								VOLTAGE REVERSAL EXCEPT DISCR PEAKS
	5.200	5.400	5.500	5.600	5.650	5.750	5.850	6.050	5.0 to 6.2
LIMITS Upper	-0.38	-1.34	-0.88	-0.14	0.000	+0.68	+1.24	+0.38	NO REVERSAL
Lower	-2.46	-2.46	-1.56	-0.42	+0.32	+1.26	+2.16	+2.46	
UNITS	VDC	VDC	VDC	VDC	VDC	VDC	VDC	VDC	
TEST PARA	8.2.1	8.2.2	8.2.3	8.2.4	8.2.5	8.2.6	8.2.7	8.2.8	8.3
1	-1.82	-1.96	-1.18	-0.35	0.20	0.69	1.35	1.24	None
2	-1.50	-1.76	-1.25	-0.40	0.10	0.91	1.62	1.26	None
3	-1.86	-1.88	-1.15	-0.36	0.20	0.81	1.70	0.74	None
4	-1.60	-1.75	-1.22	-0.38	0.16	0.88	1.72	1.46	None
5	-1.70	-1.90	-1.30	-0.40	0.20	0.92	1.70	0.96	None
6	-1.95	-2.02	-1.24	-0.38	0.10	0.70	1.40	0.70	None
7	-1.60	-1.87	-1.22	-0.39	0.08	0.74	1.42	1.48	None
8	-1.72	-1.84	-1.16	-0.37	0.25	0.78	1.56	1.42	None
9	-1.64	-1.96	-1.26	-0.39	0.22	0.72	1.38	1.40	None
10	-1.88	-1.75	-1.18	-0.38	0.08	0.76	1.62	1.56	None

GENERAL DATA SHEET

TEST: A3700A Module Performance	SPEC: SC-A-400354	PARA: See Below	TEST NO:
TEST CONDITIONS: Tested on Government Electrical Gage NR 323846-1			DATE: 2-14-77
MATERIAL: A3700A Module built per this ECP			TEMP: RH:
MANUFACTURER: Memcor			M. NO:
INSTRUMENTS: HP 413 RF Voltmeter Calibrated 2-6-76; HP 606A RF Generator Calibrated 2-7-76; HP 410 VTVM Calibrated 1-5-77; 535 Tektronics Scope Calibrated 11-15-76; NR 323846-1 Calibrated 11-18-76			TESTED BY: T. Phillips LAB. SUP. CHECK ENGRG. CHECK T. Phillips

UNIT NO.	GAIN Para. 8.2	DC RESIDUAL VOLTAGE Maximum Negative to	Maximum Positive
Limits	5.3 to 7.2	-0.20	+0.20
	VP-P	VDC	VDC
11	6.2	-0.1	+0.05
12	6.2	-0.04	+0.04
13	6.4	-0.06	+0.09
14	6.3	-0.10	+0.05
15	6.2	-0.09	+0.03
16	6.2	-0.11	+0.07
17	6.2	-0.09	+0.05
18	6.4	-0.06	+0.06
19	6.4	-0.05	+0.08
20	6.2	-0.05	+0.03
21	6.3	-0.07	+0.06

A4100A TEST DATA

Unit No.	Gain Test	Bandwidth		Temp Cond
	Output = 100mV	Output = 100mV		
Freq	11.5 MHz	11.075 MHz	11.925 MHz	
Limits	0.325 to 1.75 mV	37mV (Min)	37mV (Min)	
#52	1.05 0.9 1.2	56 50 60	60 64 59	AMB -50°C +75°C
#55	0.9 0.7 1.2	52 50 66	61 70 56	AMB -50°C +75°C
#53	.56 .50 .70	51 50 55	40 50 39	AMB -50°C +75°C
#54	1.2 1.0 1.45	47 40 54	54 52 56	AMB -50°C +75°C
#1	0.9 .85 1.05	47 47 47	56 58 54	AMB -50°C +75°C-
#3	1.5 1.3 1.6	76 75 75	60 62 60	AMB -50°C +75°C
#4	1.05 .85 1.35	53 53 53	57 60 54	AMB -50°C +75°C
#6	1.0 .95 1.25	61 61 71	62 64 60	AMB -50°C +75°C
#8	1.3 0.9 1.8	55 50 64	63 63 62	AMB -50°C +75°C
#9	1.4 1.2 2.1	49 48 61	59 59 60	AMB -50°C +75°C

GENERAL DATA SHEET

PAGE NO.

TEST: A-4200A	SPEC: NEW	PAR:	TEST NO:
TEST CONDITIONS: IC VERSION			DATE: 6-21-77
MATERIAL: --			TEMP: RM
MANUFACTURER:			M. NO:
INSTRUMENTS:			TESTED BY: Y.Min
			LAB.SUP.CHECK
			ENGRG. CHECK:

Instrument	Model		CALIB
SIGNAL GENERATOR	BOONTON 102A	(3297)	4-7-77
AUDIO GENERATOR	hp 209A	(3657)	6-13-77
DISTORTION ANALYZER	hp 331A	(3774)	

TEST / MODULE	9.1 INPUT LIMITING THRESHOLD @ -1.0 dB	9.2 FREQ.RESPONSE 1mv Ref 11.5MHz	9.3 AUDIO OUTPUT @ 1mv @ 68kΩ	9.4 DISTORTION fm = 20KHz fd = 20KHz	
LIMIT	140 µv Max.	±0.5 dB	70mV ± 3dB	3.3% Max.	
54	36 µv	0	73 mv	.35%	
55	37 µv	0	78 mv	.25%	
56	35 µv	0	85 mv	.23%	
57	43 µv	0	73 mv	.23%	
58	36 µv	0	85 mv	.24%	
59	39 µv	0	76 mv	.22%	
60	36 µv	0	78 mv	.24%	
61	45 µv	0	79 mv	.21%	
62	40 µv	0	75 mv	.48%	
63	43 µv	0	74 mv	.40%	

TEST: A4300A Module	SPEC: SC-A-400347A	PARA: 9.0	TEST NO:
TEST CONDITIONS:			DATE:
MATERIAL: Govt. Test Fixture			TEMP: AMBIENT RH:
MANUFACTURER: E-Systems Inc., Memcor Division			M. NO:
INSTRUMENTS: Govt. Gage RCVR Audio and Squelch Preamp. HP Signal Generator Model 206A HP Model 330B Distortion Analyzer HP Model 400 D VTVM			TESTED BY: S. Shastri LAB. SUP. CHECK ENGRG. CHECK

SENSITIVITY

LIMITS	0.2 to 0.42 VRMS						
UNIT \ FREQ IN HZ	150	300	1000	2000	3000	10,000	20,000
1	0.305	0.300	0.300	0.300	0.290	0.280	0.285
2	0.305	0.300	0.300	0.297	0.290	0.285	0.285
3	0.305	0.300	0.297	0.297	0.290	0.285	0.285
4	0.305	0.300	0.297	0.297	0.297	0.300	0.290
5	0.300	0.300	0.295	0.290	0.285	0.280	0.280
6	0.305	0.300	0.297	0.295	0.290	0.290	0.290
7	0.305	0.300	0.297	0.295	0.290	0.280	0.280
8	0.300	0.300	0.297	0.290	0.290	0.280	0.280
9	0.300	0.300	0.295	0.290	0.290	0.280	0.285
10	0.300	0.300	0.300	0.295	0.290	0.280	0.280

TEST: A4300A Module	SPEC: SC-A-400347A	PARA: 9.0	TEST NO:
TEST CONDITIONS:			DATE: 10-6-76
MATERIAL: Govt. Test Fixture			TEMP: RH: AMBIENT
MANUFACTURER: E-Systems, Inc., Memcor Division			M. NO:
INSTRUMENTS: Govt. Gage RCVR Audio and Squelch Preamp HP Signal Generator Model 206A HP Model 330B Distortion Analyzer HP Model 400 D VTVM			TESTED BY: S. Shastri LAB. SUP. CHECK ENGRG. CHECK

DISTORTION

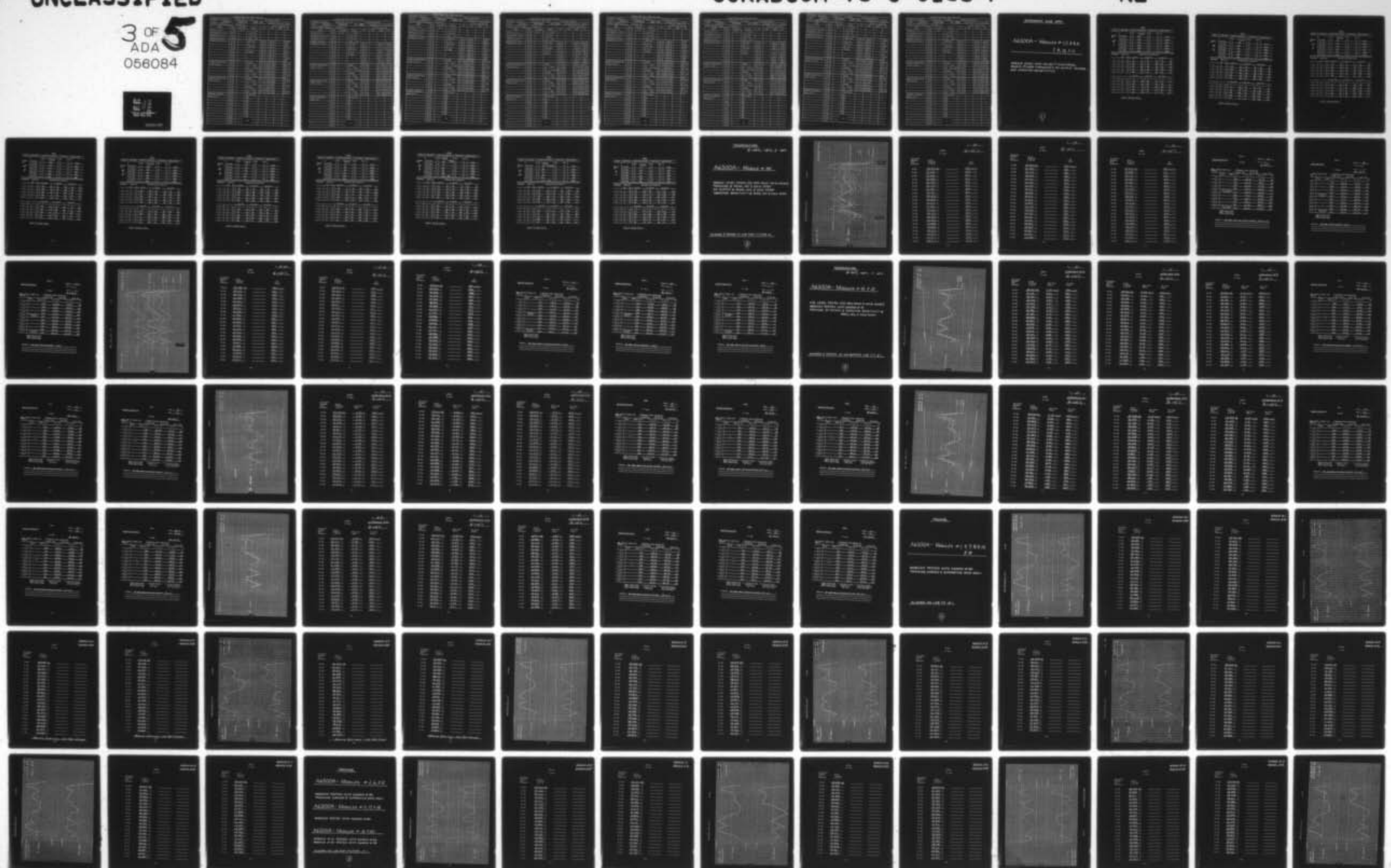
LIMITS	2.1% Max						
UNIT \ FREQ IN HZ	150	300	1000	2000	3000	10,000	20,000
1	0.41	0.35	0.32	0.32	0.31	0.30	0.26
2	0.46	0.37	0.36	0.34	0.35	0.32	0.40
3	0.42	0.36	0.39	0.36	0.32	0.28	0.27
4	0.46.	0.38	0.36	0.36	0.40	0.36	0.36
5	0.40	0.40	0.41	0.38	0.36	0.32	0.32
6	0.46	0.38	0.38	0.38	0.35	0.32	0.32
7	0.40	0.34	0.32	0.30	0.30	0.32	0.34
8	0.37	0.30	0.30	0.27	0.25	0.24	0.26
9	0.44	0.36	0.34	0.34	0.24	0.32	0.36
10	0.43	0.42	0.37	0.34	0.33	0.30	0.30

TEST: A-5100A Audio Amp	SPEC: SCA400355A	PAR: 8.2	TEST NO: 2
TEST CONDITIONS: A-5100A Module with Silicon output Transistor (2N5868)			DATE: 3-16-76
MATERIAL:			TEMP.: RH:
MANUFACTURER: E-SYSTEMS INC., MEMCOR DIVISION			M. NO:
INSTRUMENTS:		DATE	TESTED BY: Y. MIN
Distortion Analyzer HP331A	3494	2-10-76	LAB.SUP.CHECK
Audio Generator HP209A	3491	2-10-76	
VTVM Ballantine 320A	0838	2-21-76	ENGRG. CHECK:
Tested in Engineering Lab			

ec	@22.0V DC						@25.5V DC						@30.0V DC						Current including output stage @ 25.5 VDC
	Gain .36 to .68V			Distortion 1.7% MAX			Gain .36 to .68V			Distortion 1.7% MAX			Gain .36 to .68V			Distortion 1.7% MAX			
req	500 Hz	1K	3K	500	1K	3K	500	1K	3K	500	1K	3K	500	1K	3K	500	1K	3K	(mA)
1	.48	.46	.44	.25	.22	.15	.48	.46	.44	.26	.16	.14	.48	.46	.44	.27	.16	.14	125
2	.49	.46	.45	.23	.14	.16	.49	.46	.45	.24	.15	.14	.49	.46	.45	.25	.15	.14	135
3	.50	.47	.45	.31	.18	.16	.50	.47	.45	.31	.18	.16	.50	.47	.45	.31	.19	.17	125
4	.51	.50	.47	.38	.26	.23	.51	.50	.47	.38	.27	.22	.51	.50	.45	.32	.24	.15	125
5	.50	.48	.47	.23	.15	.16	.50	.48	.47	.21	.15	.15	.50	.48	.47	.25	.16	.15	130
6	.48	.46	.44	.32	.21	.18	.48	.46	.45	.33	.21	.17	.48	.46	.44	.34	.21	.17	122
7	.48	.44	.44	.49	.27	.23	.48	.44	.44	.46	.27	.23	.48	.44	.44	.46	.28	.24	110
8	.49	.47	.45	.31	.19	.16	.49	.47	.46	.32	.19	.16	.49	.47	.45	.32	.20	.15	120
9	.51	.54	.50	.22	.21	.21	.59	.54	.50	.24	.22	.10	.59	.54	.53	.30	.11	.10	128
10	.50	.48	.47	.34	.25	.21	.50	.48	.47	.37	.24	.20	.51	.48	.47	.39	.26	.22	128

AD-A056 084 E-SYSTEMS INC HUNTINGTON IN MEMCOR DIV F/G 17/2.1
AN/VRC-12, 43-49 SERIES RADIO SET SILICONIZATION PRODUCT IMPROV--ETC(U)
MAY 78 K P YELTON DAAB07-76-C-0135
UNCLASSIFIED CORADCOM-76-C-0135-F NL

3 OF 5
ADA
056084



A5200A/A5300A RADIO LEVEL TEST DATA

Equipment RT246	Serial No. 1604	E-Systems/MEMCOR
C TEST Subgroup V	TEMPERATURE LOW HIGH	DAAB07-76-C-0135
Tested by: J. Takune	Witness by:	Date: 6 APR 78

Test	Freq.	Voltage	Limits	+77	LOW	HIGH	+77
Muting 3.9.1.1	60.05	25.5	5 - 6 volts				
Loudspeaker 3.9.1.2	60.05		17.3V Min.				
Headphone 3.9.1.3	60.05		7.75V Min.				
Monitor 3.9.1.4	60.05		.15V - .31V				
Sensitivity 3.9.5	30.00		10db Min.	23.5	23.5		23.5
	65.10		@ .5 uv	22.0	21.0		20.[illegible]
	41.30		10db Min.	24.0	24.0		24.0
	75.90		@ .6 uv	22.0	21.0		21.[illegible]
	52.95		@ Temp.	24.5	24.0		25.0
	53.00			22.5	22.5		21.5
	41.50			24.0	24.0		24.0
	64.50			22.0	21.0		20.[illegible]
Squelch Sensitivity	30.00		Normal	3.4-3.7	3.2-3.5		3.6-3.9
Noise 3.9.6.2	65.40		ON - 7 Max.	4.2-4.4	4.6-5.0		4.3-[illegible]6
	41.50		OFF - 5.5 Max.	3.2-3.4	3.0-3.3		3.2-3.6
	53.60		Extreme	4.0-4.2	4.0-4.4		4.2-[illegible]5
	52.70		ON - 8 Max.	3.1-3.2	2.8-3.0		3.0-3.2
	75.80		OFF - 7 Max.	4.1-4.2	4.7-5.0		4.3-[illegible]7
Squelch Sensitivity	30.00		Normal	1.7-2.1	2.0-2.7		2.4-3.3
Tone 3.9.6.1	65.20		ON - 5 Max.	2.1-2.8	3.4-4.4		3.0-3.8
	41.50		OFF - 4 Max.	1.6-2.0	1.8-2.5		2.0-3.0
	52.45		Extreme	1.6-2.1	1.9-2.4		2.0-2.7
	53.00		ON - 8 Max.	1.8-2.5	2.5-3.3		2.6-[illegible]0
	75.95		OFF - 7 Max.	2.0-2.6	3.3-4.6		3.0-4.0
Receiver Catching	30.90		250 KC Min.				
Range 3.9.7	31.90		250				
	Total		850				
	31.95		250				
	32.95		250				
	Total		850				
	32.90		250				
	33.90		250				
	Total		850				
	33.95						
	34.95						
	Total						

A5200A/A5300A RADIO LEVEL TEST DATA

Equipment RT246	Serial No. 1604	E-Systems/MEMCOR
C TEST Subgroup V	TEMPERATURE LOW (HIGH)	DAAB07-76-C-0135
Tested by: F. Tellum	Witness by:	Date: 9 APR 78

Test	Freq.	Voltage	Limits	+77	LOW	HIGH	+77
Muting 3.9.1.1	60.05	25.5	5 - 6 volts				
Loudspeaker 3.9.1.2	60.05		17.3V Min.				
Headphone 3.9.1.3	60.05		7.75V Min.				
Monitor 3.9.1.4	60.05		.16V - .31V				
Sensitivity 3.9.5	30.00		10db Min.	23.5		25.0	22.0
	65.10		@ .5 uv	20.5		17.0	17.0
	41.30		10db Min.	24.0		26.0	23.0
	75.90		@ .6 uv	21.5		19.5	17.0
	52.95		@ Temp.	25.0		26.0	23.0
	53.00			21.5		21.5	19.0
	41.50			24.0		26.0	23.0
	64.50			20.5		17.0	16.5
Squelch Sensitivity	30.00		Normal	3.6-3.9		4.1-4.8	4.1-4.3
Noise 3.9.6.2	65.40		ON - 7 Max.	4.3-4.6		5.4-6.4	5.0-5.2
	41.50		OFF - 5.5 Max.	3.2-3.6		3.6-4.2	3.6-3.8
	53.60		Extreme	4.2-4.5		4.9-5.6	4.9-5.1
	52.70		ON - 8 Max.	3.0-3.2		3.4-4.0	3.6-3.8
	75.80		OFF - 7 Max.	4.3-4.7		5.4-6.3	5.0-5.2
Squelch Sensitivity	30.00		Normal	2.4-3.3		2.4-3.5	2.3-3.4
Tone 3.9.6.1	65.20		ON - 5 Max.	3.0-3.8		3.6-4.6	3.1-4.0
	41.50		OFF - 4 Max.	2.0-3.0		2.3-3.3	2.0-3.0
	52.45		Extreme	2.0-2.7		2.2-3.0	2.0-3.2
	53.00		ON - 8 Max.	2.6-3.6		3.0-4.2	2.8-4.0
	75.95		OFF - 7 Max.	3.0-4.0		3.4-4.8	2.4-3.6
Receiver Catching	30.90		250 KC Min.				
Range 3.9.7	31.90		250				
	Total		850				
	31.95		250				
	32.95		250				
	Total		850				
	32.90		250				
	33.90		250				
	Total		850				
	33.95						
	34.95						
	Total						

A5200A/A5300A RADIO LEVEL TEST DATA

Equipment R442	Serial No. 3839	E-Systems/MEMCOR
C TEST Subgroup V	TEMPERATURE LOW HIGH	DAAB07-76-C-0135
Tested by: [signature]	Witness by:	Date: 6 APR 78

Test	Freq.	Voltage	Limits	+77	LOW	HIGH	+77
Muting 3.9.1.1	60.05	25.5	5 - 6 volts				
Loudspeaker 3.9.1.2	60.05		17.3V Min.				
Headphone 3.9.1.3	60.05		7.75V Min.				
Monitor 3.9.1.4	60.05		.15V - .31V				
Sensitivity 3.9.5	30.00		10db Min.	24.0	23.5		22.0
	65.10		@ .5 uv	20.0	23.5		22.0
	41.30		10db Min.	22.5	24.0		21.0
	75.90		@ .6 uv	22.5	23.5		21.0
	52.95		@ Temp.	22.5	22.5		22.0
	53.00			21.0	23.0		20.0
	41.50			23.0	23.0		22.0
	64.50			22.5	23.0		22.0
Squelch Sensitivity	30.00		Normal	3.0-3.4	3.4-3.8		3.6-4.0
Noise 3.9.6.2	65.40		ON - 7 Max.	3.4-3.7	3.4-3.7		3.6-3.7
	41.50		OFF - 5.5 Max.	3.4-3.5	3.3-3.6		3.6-3.9
	53.60		Extreme	3.5-3.6	3.6-3.8		3.7-4.0
	52.70		ON - 8 Max.	3.6-3.8	3.4-3.7		3.8-4.1
	75.80		OFF - 7 Max.	3.4-3.6	3.5-3.7		3.6-4.0
Squelch Sensitivity	30.00		Normal	1.6-2.2	2.4-3.4		2.4-3.4
Tone 3.9.6.1	65.20		ON - 5 Max.	2.0-2.6	2.6-3.4		2.2-3.1
	41.50		OFF - 4 Max.	1.8-2.3	2.0-2.8		2.4-3.3
	52.45		Extreme	1.6-2.4	1.7-2.6		2.4-3.2
	53.00		ON - 8 Max.	2.1-2.8	2.0-3.2		3.2-4.3
	75.95		OFF - 7 Max.	1.8-2.5	1.6-2.5		2.0-3.0
Receiver Catching	30.90		250 KC Min.				
Range 3.9.7	31.90		250				
	Total		850				
	31.95		250				
	32.95		250				
	Total		850				
	32.90		250				
	33.90		250				
	Total		850				
	33.95						
	34.95						
	Total						

A5200A/A5300A RADIO LEVEL TEST DATA

Equipment 72L1L12	Serial No. 3839	E-Systems/MEMCOR
C TEST Subgroup V	TEMPERATURE LOW (HIGH)	DAAB07-76-C-0135
Tested by: E. Tedome	Witness by:	Date: 9 APR 78

Test	Freq.	Voltage	Limits	+77	LOW	HIGH	+77
Muting 3.9.1.1	60.05	25.5	5 - 6 volts				
Loudspeaker 3.9.1.2	60.05		17.3V Min.				
Headphone 3.9.1.3	60.05		7.75V Min.				
Monitor 3.9.1.4	60.05		.16V - .31V				
Sensitivity 3.9.5	30.00		10db Min.	22.0		23.0	20.0
	65.10		@ .5 uv	22.0		19.0	19.0
	41.30		10db Min.	21.0		22.0	18.0
	75.90		@ .6 uv	21.0		18.0	20.0
	52.95		@ Temp.	22.0		20.5	19.0
	53.00			20.0		19.5	17.0
	41.50			22.0		21.5	18.0
	64.50			22.0		19.5	19.0
Squelch Sensitivity	30.00		Normal	3.6-4.0		3.8-4.1	3.8-4.1
Noise 3.9.6.2	65.40		ON - 7 Max.	3.6-3.9		4.7-4.9	4.1-4.3
	41.50		OFF - 5.5 Max.	3.6-3.9		4.2-4.4	4.0-4.2
	53.60		Extreme	3.7-4.0		4.2-4.8	4.0-4.4
	52.70		ON - 8 Max.	3.8-4.1		4.4-4.6	4.0-4.4
	75.80		OFF - 7 Max.	3.6-4.0		4.7-5.0	4.0-4.3
Squelch Sensitivity	30.00		Normal	2.4-3.4		3.4-4.5	2.1-3.0
Tone 3.9.6.1	65.20		ON - 5 Max.	2.2-3.4		4.8-6.0	2.6-3.7
	41.50		OFF - 4 Max.	2.4-3.3		3.7-4.8	2.2-3.2
	52.45		Extreme	2.4-3.6		3.0-4.8	2.3-3.7
	53.00		ON - 8 Max.	3.2-4.3		4.2-5.6	3.6-5.0
	75.95		OFF - 7 Max.	2.0-3.0		4.0-4.8	2.3-3.4
Receiver Catching	30.90		250 KC Min.				
Range 3.9.7	31.90		250				
	Total		850				
	31.95		250				
	32.95		250				
	Total		850				
	32.90		250				
	33.90		250				
	Total		850				
	33.95						
	34.95						
	Total						

A5200A/A5300A RADIO LEVEL TEST DATA

Equipment R442	Serial No. 3862	E-Systems/MEMCOR
C TEST Subgroup V	TEMPERATURE LOW HIGH	DAAB07-76-C-0135
Tested by: [signature]	Witness by:	Date: 6 APR 78

Test	Freq.	Voltage	Limits	+77	LOW	HIGH	+77
Muting 3.9.1.1	60.05	25.5	5 - 6 volts				
Loudspeaker 3.9.1.2	60.05		17.3V Min.				
Headphone 3.9.1.3	60.05		7.75V Min.				
Monitor 3.9.1.4	60.05		.16V - .31V				
Sensitivity 3.9.5	30.00		10db Min.	23.0	23.0		22.[illegible]
	65.10		@ .5 uv	22.5	23.5		21.0
	41.30		10db Min.	24.0	24.0		23.[illegible]
	75.90		@ .6 uv	19.5	22.0		19.[illegible]
	52.95		@ Temp.	24.5	24.0		23.[illegible]
	53.00			22.5	23.5		20.[illegible]
	41.50			24.0	24.0		23.5
	64.50			22.5	24.0		20.[illegible]
Squelch Sensitivity	30.00		Normal	3.0-3.2	3.0-3.3		3.4-3.6
Noise 3.9.6.2	65.40		ON - 7 Max.	3.4-3.6	3.5-3.7		3.8-4[illegible]1
	41.50		OFF - 5.5 Max.	2.9-3.0	2.8-3.1		3.0-3.3
	53.60		Extreme	3.2-3.4	3.2-3.5		4.1-4[illegible]
	52.70		ON - 8 Max.	2.8-2.9	3.0-3.2		3.4-3.6
	75.80		OFF - 7 Max.	4.2-4.4	3.7-4.0		4.4-4[illegible]
Squelch Sensitivity	30.00		Normal	1.4-2.1	1.1-1.8		2.0-2.6
Tone 3.9.6.1	65.20		ON - 5 Max.	1.8-2.5	1.5-2.2		1.6-[illegible]7
	41.50		OFF - 4 Max.	1.4-2.0	1.0-1.8		2.0-2.6
	52.45		Extreme	1.5-2.1	1.4-2.1		2.2-3[illegible]
	53.00		ON - 8 Max.	1.8-2.5	1.3-2.1		2.7-3.1
	75.95		OFF - 7 Max.	2.3-3.2	1.5-2.5		1.8-3[illegible]
Receiver Catching	30.90		250 KC Min.				
Range 3.9.7	31.90		250				
	Total		850				
	31.95		250				
	32.95		250				
	Total		850				
	32.90		250				
	33.90		250				
	Total		850				
	33.95						
	34.95						
	Total						

A5200A/A5300A RADIO LEVEL TEST DATA

Equipment RU42	Serial No. 3862	E-Systems/MEMCOR
C TEST Subgroup V	TEMPERATURE LOW (HIGH)	DAAB07-76-C-0135
Tested by: F. Terlunne	Witness by:	Date: 9 APR 78

Test	Freq.	Voltage	Limits	+77	LOW	HIGH	+77
Muting 3.9.1.1	60.05	25.5	5 - 6 volts				
Loudspeaker 3.9.1.2	60.05		17.3V Min.				
Headphone 3.9.1.3	60.05		7.75V Min.				
Monitor 3.9.1.4	60.05		.15V - .31V				
Sensitivity 3.9.5	30.00		10db Min.	22.5		24.0	22.0
	65.10		@ .5 uv	21.0		20.5	19.0
	41.30		10db Min.	23.5		25.0	22.0
	75.90		@ .6 uv	19.0		17.5	17.0
	52.95		@ Temp.	23.0		25.5	23.0
	53.00			20.0		20.5	20.5
	41.50			23.5		25.5	22.0
	64.50			20.5		19.5	19.0
Squelch Sensitivity	30.00		Normal	3.4-3.6		3.8-4.2	3.8-4.0
Noise 3.9.6.2	65.40		ON - 7 Max.	3.8-41		4.6-4.8	41-45
	41.50		OFF - 5.5 Max.	3.0-3.3		3.1-3.5	3.4-3.6
	53.60		Extreme	4.1-4.4		4.3-4.5	4.2-4.4
	52.70		ON - 8 Max.	3.4-3.6		3.2-3.5	3.2-3.4
	75.80		OFF - 7 Max.	4.4-4.6		5.8-6.0	4.5-4.8
Squelch Sensitivity	30.00		Normal	2.0-2.6		1.6-3.2	1.5-2.5
Tone 3.9.6.1	65.20		ON - 5 Max.	1.6-2.7		2.6-3.6	1.7-2.7
	41.50		OFF - 4 Max.	2.0-2.6		1.4-2.6	1.3-2.4
	52.45		Extreme	2.2-3.0		1.8-2.6	1.2-2.2
	53.00		ON - 8 Max.	2.7-3.7		2.4-3.6	1.5-2.3
	75.95		OFF - 7 Max.	1.8-3.2		2.6-4.0	2.0-3.6
Receiver Catching	30.90		250 KC Min.				
Range 3.9.7	31.90		250				
	Total		850				
	31.95		250				
	32.95		250				
	Total		850				
	32.90		250				
	33.90		250				
	Total		850				
	33.95						
	34.95						
	Total						

AJ200A/AJ500A RADIO LEVEL TEST DATA

Equipment RTS24	Serial No. 18786		E-Systems/MEMCOR				
C TEST Subgroup V	TEMPERATURE	LOW HIGH	DAAB07-76-C-0135				
Tested by: L. Tedume	Witness by:		Date: 6 APR 78				
Test	**Freq.**	**Voltage**	**Limits**	**+77**	**LOW**	**HIGH**	**+77**
Muting 3.9.1.1	60.05	25.5	5 - 6 volts				
Loudspeaker 3.9.1.2	60.05		17.3V Min.				
Headphone 3.9.1.3	60.05		7.75V Min.				
Monitor 3.9.1.4	60.05		.16V - .31V				
Sensitivity 3.9.5	30.00		10db Min.	23.0	22.5		22.0
	65.10		@ .5 uv	22.0	24.5		20.[illegible]
	41.30		10db Min.	25.0	25.0		25.0
	75.90		@ .6 uv	22.5	23.0		20.[illegible]
	52.95		@ Temp.	25.0	25.0		24.0
	53.00			23.0	24.0		21.[illegible]
	41.50			25.0	24.5		25.0
	64.50			22.0	24.5		20.[illegible]
Squelch Sensitivity	30.00		Normal	4.0-4.2	4.4-4.8		4.4-4.6
Noise 3.9.6.2	65.40		ON - 7 Max.	4.0-4.2	4.0-4.2		4.2-[illegible]5
	41.50		OFF - 5.5 Max.	3.3-3.5	3.3-3.5		3.4-3.7
	53.60		Extreme	4.1-4.4	4.0-4.3		4.5-[illegible]8
	52.70		ON - 8 Max.	3.0-3.2	2.8-3.1		3.1-3.4
	75.80		OFF - 7 Max.	4.1-4.2	4.0-4.4		4.1-4.4
Squelch Sensitivity	30.00		Normal	2.3-3.0	2.8-3.8		2.4-3.[illegible]
Tone 3.9.6.1	65.20		ON - 5 Max.	2.5-3.4	2.6-4.0		2.2-3.4
	41.50		OFF - 4 Max.	1.8-2.6	1.8-2.8		1.8-[illegible]
	52.45		Extreme	1.8-2.5	1.8-2.6		1.8-2.6
	53.00		ON - 8 Max.	2.4-3.4	2.0-3.0		2.3-3.5
	75.95		OFF - 7 Max.	2.4-3.2	2.5-3.8		2.3-3.5
Receiver Catching	30.90		250 KC Min.				
Range 3.9.7	31.90		250				
	Total		850				
	31.95		250				
	32.95		250				
	Total		850				
	32.90		250				
	33.90		250				
	Total		850				
	33.95						
	34.95						
	Total						

A5200A/A5300A RADIO LEVEL TEST DATA

Equipment RT524	Serial No. 18786	E-Systems/MEMCOR
C TEST Subgroup V	TEMPERATURE LOW HIGH	DAAB07-76-C-0135
Tested by: E. Telune	Witness by:	Date: 9 APR 78

Test	Freq.	Voltage	Limits	+77	LOW	HIGH	+77
Muting 3.9.1.1	60.05	25.5	5 - 6 volts				
Loudspeaker 3.9.1.2	60.05		17.3V Min.				
Headphone 3.9.1.3	60.05		7.75V Min.				
Monitor 3.9.1.4	60.05		.15V - .31V				
Sensitivity 3.9.5	30.00		10db Min.	22.0		23.0	20.0
	65.10		@ .5 uv	20.5		17.0	19.5
	41.30		10db Min.	25.0		25.0	23.0
	75.90		@ .6 uv	20.0		20.5	20.0
	52.95		@ Temp.	24.0		25.5	23.5
	53.00			21.0		21.0	20.0
	41.50			25.0		25.5	23.0
	64.50			20.0		17.0	20.0
Squelch Sensitivity	30.00		Normal	4.4-4.6		4.8-5.3	4.6-4.8
Noise 3.9.6.2	65.40		ON - 7 Max.	4.2-4.5		4.8-5.6	4.2-4.6
	41.50		OFF - 5.5 Max.	3.4-3.7		4.0-4.3	3.6-4.0
	53.60		Extreme	4.5-4.8		5.2-5.7	4.6-4.9
	52.70		ON - 8 Max.	3.1-3.4		3.6-3.9	3.6-3.8
	75.80		OFF - 7 Max.	4.1-4.4		4.8-5.4	4.4-4.8
Squelch Sensitivity	30.00		Normal	2.4-3.6		3.4-4.4	3.0-4.4
Tone 3.9.6.1	65.20		ON - 5 Max.	2.2-3.4		3.5-5.2	2.4-3.8
	41.50		OFF - 4 Max.	1.8-3.0		2.7-3.9	2.2-3.2
	52.45		Extreme	1.8-2.6		2.6-3.8	2.4-3.6
	53.00		ON - 8 Max.	2.3-3.5		3.8-4.8	2.6-3.8
	75.95		OFF - 7 Max.	2.3-3.5		3.4-4.4	2.3-3.6
Receiver Catching	30.90		250 KC Min.				
Range 3.9.7	31.90		250				
	Total		850				
	31.95		250				
	32.95		250				
	Total		850				
	32.90		250				
	33.90		250				
	Total		850				
	33.95						
	34.95						
	Total						

GOVERNMENT GAGE DATA

A6300A - MODULES # 1, 2, 3, 4, 6, 7, 8, 10, & 11

MODULE LEVEL TEST ON GOV'T ELECTRICAL GAGES. (TUNER FREQUENCY, RF OUTPUT VOLTAGE, AND VARACTOR SENSITIVITY.)

1

LOT NO.	TEST FREQ	OUTPUT VOLTAGE (MV)		TUNER FREQ		FREQ READING
		(MIN)	wo/COUNTER LOADING	(MIN)	(MAX)	
SAMPLE NO.	30.00 MHz	48	100	987	013	004
	40.91 MHz	60	110	187	213	203
#	52.91 MHz	62	110	403	433	423
1	53.00 MHz	66	160	987	013	006
	63.91 MHz	68	145	187	213	200
	75.91 MHz	70	130	403	433	425

FREQUENCY SHIFT SENSITIVITY

FREQ SHIFT	LIMITS (KC) MIN	MAX	30.00 MHz (-)	30.00 MHz (+)	40.91 MHz (-)	40.91 MHz (+)	52.91 MHz (-)	52.91 MHz (+)
.2	48	130	61	61	76	77	97	98
.4	48	130	58	65	73	80	96	107
.6	48	130	57	67	69	83	93	110
.8	48	130	54	69	68	87	88	112
1.0	48	130	53	75	66	89	82	114

FREQ SHIFT	MIN	MAX	53.00 MHz (-)	53.00 MHz (+)	63.91 MHz (-)	63.91 MHz (+)	75.91 MHz (-)	75.91 MHz (+)
.2	55	130	70	68	84	81	113	110
.4	55	130	69	70	82	92	98	111
.6	55	130	68	71	77	106	95	116
.8	55	130	66	77	72	107	85	118
1.0	55	130	62	82	71	114	84	124

GOV'T GAGE DATA

A6300A

LOT NO.	TEST FREQ	OUTPUT VOLTAGE (MV) (MIN)	OUTPUT VOLTAGE (MV) WO/COUNTER LOADING	TUNER FREQ (MIN)	TUNER FREQ (MAX)	FREQ READING
SAMPLE NO. # 2	30.00 MHz	48	118	987	013	008
	40.91 MHz	60	120	187	213	205
	52.91 MHz	62	112	403	433	425
	53.00 MHz	66	147	987	013	008
	63.91 MHz	68	135	187	213	201
	75.91 MHz	70	105	403	433	426

FREQUENCY SHIFT SENSITIVITY

FREQ SHIFT	LIMITS (KC) MIN	LIMITS (KC) MAX	30.00 MHz (-)	30.00 MHz (+)	40.91 MHz (-)	40.91 MHz (+)	52.91 MHz (-)	52.91 MHz (+)
.2	48	130	57	59	72	73	90	93
.4	48	130	55	60	69	77	87	96
.6	48	130	53	63	68	80	85	99
.8	48	130	52	64	65	82	83	104
1.0	48	130	47	68	63	85	80	106

			53.00 MHz (-)	53.00 MHz (+)	63.91 MHz (-)	63.91 MHz (+)	75.91 MHz (-)	75.91 MHz (+)
.2	55	130	61	64	74	77	90	92
.4	55	130	60	65	72	79	87	94
.6	55	130	59	68	70	81	85	97
.8	55	130	58	69	69	82	83	100
1.0	55	130	57	71	67	88	82	103

GOV'T GAGE DATA

A6300A

LOT NO.	TEST FREQ	OUTPUT VOLTAGE (MV)		TUNER FREQ		FREQ READING
		(MIN)	WO/COUNTER LOADING	(MIN)	(MAX)	
SAMPLE NO. # 3	30.00 MHz	48	118	987	013	007
	40.91 MHz	60	125	187	213	205
	52.91 MHz	62	120	403	433	424
	53.00 MHz	66	154	987	013	007
	63.91 MHz	68	136	187	213	200
	75.91 MHz	70	112	403	433	423

FREQ SHIFT / LIMITS (KC) / FREQUENCY SHIFT SENSITIVITY

FREQ SHIFT	LIMITS (KC) MIN	LIMITS (KC) MAX	30.00 MHz (-)	30.00 MHz (+)	40.91 MHz (-)	40.91 MHz (+)	52.91 MHz (-)	52.91 MHz (+)
.2	48	130	57	58	72	75	88	94
.4	48	130	55	62	70	77	87	97
.6	48	130	54	63	68	79	85	101
.8	48	130	53	66	67	83	82	104
1.0	48	130	49	69	61	86	81	108

FREQ SHIFT	LIMITS (KC) MIN	LIMITS (KC) MAX	53.00 MHz (-)	53.00 MHz (+)	63.91 MHz (-)	63.91 MHz (+)	75.91 MHz (-)	75.91 MHz (+)
.2	55	130	68	70	80	82	95	98
.4	55	130	66	71	79	85	93	101
.6	55	130	64	73	76	87	92	104
.8	55	130	62	76	73	92	88	107
1.0	55	130	60	77	72	99	89	110

GOV'T GAGE DATA

A6300A

LOT NO.	TEST FREQ	OUTPUT VOLTAGE (MV) (MIN)	WO/COUNTER LOADING	TUNER FREQ (MIN)	(MAX)	FREQ READING
SAMPLE NO. #4	30.00 MHz	48	102	987	013	002
	40.91 MHz	60	115	187	213	201
	52.91 MHz	62	115	403	433	420
	53.00 MHz	66	167	987	013	001
	63.91 MHz	68	150	187	213	196
	75.91 MHz	70	137	403	433	420

FREQUENCY SHIFT SENSITIVITY

FREQ SHIFT	LIMITS (KC) MIN	MAX	30.00 MHz (-)	(+)	40.91 MHz (-)	(+)	52.91 MHz (-)	(+)
.2	48	130	62	63	76	80	100	103
.4	48	130	59	66	75	83	96	107
.6	48	130	58	69	71	85	93	111
.8	48	130	56	71	70	90	90	115
1.0	48	130	54	74	67	94	87	119

			53.00 MHz (-)	(+)	63.91 MHz (-)	(+)	75.91 MHz (-)	(+)
.2	55	130	99	104	85	88	103	105
.4	55	130	97	107	84	90	101	108
.6	55	130	92	111	81	91	98	111
.8	55	130	91	115	79	96	93	114
1.0	55	130	87	120	77	97	90	118

GOV'T GAGE DATA

A6300A

LOT NO.	TEST FREQ	OUTPUT VOLTAGE (MV)		TUNER FREQ		FREQ READING
		(MIN)	WO/COUNTER LOADING	(MIN)	(MAX)	
SAMPLE NO. # 5	30.00 MHz	48	139	987	013	004
	40.91 MHz	60	142	187	213	200
	52.91 MHz	62	130	403	433	422
	53.00 MHz	66	160	987	013	997
	63.91 MHz	68	143	187	213	199
	75.91 MHz	70	112	403	433	427

FREQ SHIFT — LIMITS (KC) — FREQUENCY SHIFT SENSITIVITY

FREQ SHIFT	MIN	MAX	30.00 MHz (-)	30.00 MHz (+)	40.91 MHz (-)	40.91 MHz (+)	52.91 MHz (-)	52.91 MHz (+)
.2	48	130	53	54	65	67	79	81
.4	48	130	51	56	62	69	76	84
.6	48	130	49	58	61	71	74	87
.8	48	130	48	60	59	73	72	90
1.0	48	130	47	62	56	75	69	92

FREQ SHIFT	MIN	MAX	53.00 MHz (-)	53.00 MHz (+)	63.91 MHz (-)	63.91 MHz (+)	75.91 MHz (-)	75.91 MHz (+)
.2	55	130	65	67	78	80	92	96
.4	55	130	64	69	75	82	90	98
.6	55	130	61	70	74	85	87	101
.8	55	130	60	73	72	87	86	103
1.0	55	130	59	75	70	90	82	107

GOV'T GAGE DATA

A6300A

LOT NO.	TEST FREQ	OUTPUT VOLTAGE (MV) (MIN)	W/COUNTER LOADING	TUNER FREQ (MIN)	(MAX)	FREQ READING
SAMPLE NO. # 6	30.00 MHz	48	69	987	013	003
	40.91 MHz	60	80	187	213	202
	52.91 MHz	62	82	403	433	422
	53.00 MHz	66	110	987	013	000
	63.91 MHz	68	100	187	213	200
	75.91 MHz	70	91	403	433	424

FREQUENCY SHIFT SENSITIVITY

FREQ SHIFT	LIMITS (KC) MIN	MAX	30.00 MHz (-)	30.00 MHz (+)	40.91 MHz (-)	40.91 MHz (+)	52.91 MHz (-)	52.91 MHz (+)
.2	48	130	56	59	70	74	91	92
.4	48	130	55	60	69	75	89	94
.6	48	130	54	64	68	79	87	98
.8	48	130	51	66	64	82	83	102
1.0	48	130	50	69	63	85	82	106

			53.00 MHz (-)	53.00 MHz (+)	63.91 MHz (-)	63.91 MHz (+)	75.91 MHz (-)	75.91 MHz (+)
.2	55	130	63	64	78	80	93	96
.4	55	130	61	66	77	83	92	98
.6	55	130	60	67	75	85	91	102
.8	55	130	58	70	73	87	87	107
1.0	55	130	56	72	71	89	84	109

GOV'T GAGE DATA

A6300A

LOT NO.	TEST FREQ	OUTPUT VOLTAGE (MV)		TUNER FREQ		FREQ READING
		(MIN)	W/COUNTER LOADING	(MIN)	(MAX)	
SAMPLE NO.	30.00 MHz	48	67	987	013	000
	40.91 MHz	60	76	187	213	200
#	52.91 MHz	62	76	403	433	420
7	53.00 MHz	66	100	987	013	997
	63.91 MHz	68	100	187	213	196
	75.91 MHz	70	93	403	433	420

FREQ SHIFT	LIMITS (KC)		FREQUENCY SHIFT SENSITIVITY					
	MIN	MAX	30.00 MHz		40.91 MHz		52.91 MHz	
			(-)	(+)	(-)	(+)	(-)	(+)
.2	48	130	58	61	74	78	95	102
.4	48	130	57	63	72	80	94	103
.6	48	130	56	66	71	83	91	107
.8	48	130	55	67	66	86	88	111
1.0	48	130	50	72	65	87	84	113

			53.00 MHz		63.91 MHz		75.91 MHz	
			(-)	(+)	(-)	(+)	(-)	(+)
.2	55	130	70	65	85	92	99	105
.4	55	130	65	68	80	93	97	110
.6	55	130	63	71	79	94	95	114
.8	55	130	61	74	78	96	93	116
1.0	55	130	60	78	76	98	92	117

GOV'T GAGE DATA

A6300A

LOT NO.	TEST FREQ	OUTPUT VOLTAGE (MV)		TUNER FREQ		FREQ READING
		(MIN)	W/COUNTER LOADING / WO/COUNTER LOAD	(MIN)	(MAX)	
SAMPLE NO. # 8	30.00 MHz	48	64	987	013	002
	40.91 MHz	60	71	187	213	200
	52.91 MHz	62	67	403	433	420
	53.00 MHz	66	91	987	013	996
	63.91 MHz	68	83	187	213	199
	75.91 MHz	70	65 - 99	403	433	427

FREQ SHIFT — LIMITS (KC) — FREQUENCY SHIFT SENSITIVITY

FREQ SHIFT	MIN	MAX	30.00 MHz (-)	30.00 MHz (+)	40.91 MHz (-)	40.91 MHz (+)	52.91 MHz (-)	52.91 MHz (+)
.2	48	130	61	62	74	77	95	99
.4	48	130	58	65	73	80	92	102
.6	48	130	57	66	69	83	89	105
.8	48	130	54	70	68	87	86	109
1.0	48	130	53	72	66	89	84	114

			53.00 MHz (-)	53.00 MHz (+)	63.91 MHz (-)	63.91 MHz (+)	75.91 MHz (-)	75.91 MHz (+)
.2	55	130	68	69	81	82	95	100
.4	55	130	65	70	78	85	94	102
.6	55	130	64	73	76	88	92	105
.8	55	130	62	75	75	89	90	109
1.0	55	130	60	77	73	93	89	111

GOV'T GAGE DATA

A6300A

LOT NO.	TEST FREQ	OUTPUT VOLTAGE (MV) (MIN)	w/COUNTER LOADING	TUNER FREQ (MIN)	(MAX)	FREQ READING
SAMPLE NO.	30.00 MHz	48	82 wo/COUNTER LOADING	987	013	003
	40.91 MHz	60	82	187	213	200
#	52.91 MHz	62	75	403	433	420
10	53.00 MHz	66	100	987	013	994
	63.91 MHz	68	88	187	213	198
	75.91 MHz	70	67 - 100	403	433	426

FREQUENCY SHIFT SENSITIVITY

FREQ SHIFT	LIMITS (KC) MIN	MAX	30.00 MHz (-)	30.00 MHz (+)	40.91 MHz (-)	40.91 MHz (+)	52.91 MHz (-)	52.91 MHz (+)
.2	48	130	59	60	77	77	95	98
.4	48	130	56	62	73	81	92	101
.6	48	130	55	65	70	83	90	105
.8	48	130	53	68	68	86	86	110
1.0	48	130	52	69	66	89	84	115

			53.00 MHz (-)	53.00 MHz (+)	63.91 MHz (-)	63.91 MHz (+)	75.91 MHz (-)	75.91 MHz (+)
.2	55	130	63	64	76	78	90	92
.4	55	130	61	66	73	79	88	96
.6	55	130	60	68	71	82	85	98
.8	55	130	58	70	70	84	84	101
1.0	55	130	57	72	68	86	82	103

GOV'T GAGE DATA

A6300A

LOT NO.	TEST FREQ	OUTPUT VOLTAGE (MV)		TUNER FREQ		FREQ READING
		(MIN)	W/COUNTER LOADING	(MIN)	(MAX)	
SAMPLE NO.	30.00 MHz	48	66	987	013	000
	40.91 MHz	60	75	187	213	198
#	52.91 MHz	62	75	403	433	449
11	53.00 MHz	66	100	987	013	996
	63.91 MHz	68	98	187	213	196
	75.91 MHz	70	86	403	433	418

FREQUENCY SHIFT SENSITIVITY

FREQ SHIFT	LIMITS (KC) MIN	MAX	30.00 MHz (-)	(+)	40.91 MHz (-)	(+)	52.91 MHz (-)	(+)
.2	48	130	63	64	79	81	101	105
.4	48	130	60	67	77	84	98	109
.6	48	130	58	70	74	88	95	113
.8	48	130	57	72	72	91	92	117
1.0	48	130	55	75	70	94	89	121

			53.00 MHz (-)	(+)	63.91 MHz (-)	(+)	75.91 MHz (-)	(+)
.2	55	130	67	69	84	86	100	103
.4	55	130	65	70	82	88	98	106
.6	55	130	64	73	79	90	95	110
.8	55	130	63	75	77	94	92	112
1.0	55	130	60	77	75	96	91	115

GOV'T GAGE DATA

TEMPERATURE

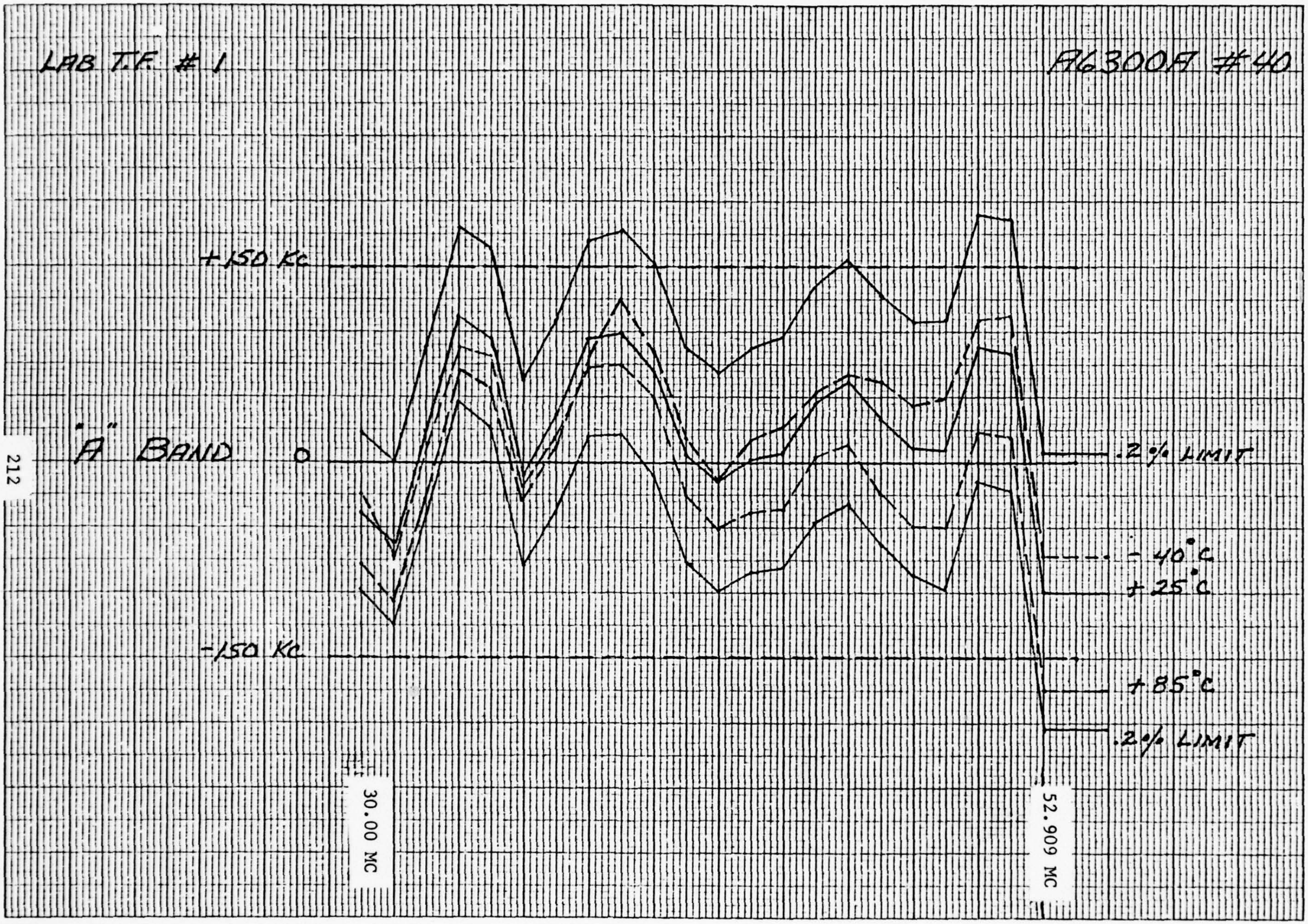
@ +25°C, +85°C, & -40°C

A6300A - MODULE # 40

MODULE LEVEL TESTS. (AS PER PRINT SM-B-416427.)
TRACKING @ ROOM, HOT & COLD TEMP.
R.F. OUTPUT @ ROOM, HOT, & COLD TEMP.
VARACTOR SENSITIVITY @ ROOM, HOT & COLD TEMP.

ALIGNED & TESTED IN LAB TEST FIXTURE #1

2


LAB I.F. # 1
A6300A #40
+150 Kc
"A" BAND
0
-150 Kc
.2% LIMIT
- 40°C
+ 25°C
+ 85°C
.2% LIMIT
30.00 MC
52.909 MC

#40

A6300A

"A" Band

@ + 25 °C

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		RF Output
30.000	29.972 Mc		330 mv
31.091	31.030 "		335 "
32.182	32.206 "		340 "
33.273	33.386 "		340 "
34.364	34.459 "		350 "
35.455	35.447 "		350 "
36.545	36.581 "		350 "
37.636	37.731 "		350 "
38.727	38.826 "		360 "
39.818	39.888 "		370 "
40.909	40.915 "		370 "
42.000	41.986 "		375 "
43.091	43.093 "		375 "
44.182	44.190 "		375 "
45.273	45.318 "		375 "
46.364	46.426 "		380 "
47.455	47.488 "		370 "
48.545	48.556 "		370 "
49.636	49.646 "		365 "
50.727	50.815 "		365 "
51.818	51.901 "		365 "
52.909	52.810 "		365 "

40

A6300A

"A" Band

@ -40° C

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		RF Output
30.000	29.922 Mc		365 mv
31.091	30.984 "		370 "
32.182	32.154 "		380 "
33.273	33.343 "		380 "
34.364	34.420 "		390 "
35.455	35.426 "		390 "
36.545	36.557 "		360 "
37.636	37.718 "		370 "
38.727	38.853 "		370 "
39.818	39.903 "		380 "
40.909	40.920 "		380 "
42.000	41.987 "		385 "
43.091	43.108 "		390 "
44.182	44.208 "		390 "
45.273	45.327 "		390 "
46.364	46.431 "		385 "
47.455	47.518 "		380 "
48.545	48.589 "		380 "
49.636	49.685 "		375 "
50.727	50.835 "		370 "
51.818	51.930 "		365 "
52.909	52.838 "		365 "

\# 40

A6300A

"A" Band

@ +85°C

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		RF Output
30.000	29.945 Mc		300 mv
31.091	30.998 "		310 "
32.182	32.170 "		315 "
33.273	33.347 "		320 "
34.364	34.432 "		320 "
35.455	35.414 "		325 "
36.545	36.548 "		325 "
37.636	37.705 "		330 "
38.727	38.795 "		330 "
39.818	39.858 "		335 "
40.909	40.863 "		340 "
42.000	41.935 "		340 "
43.091	43.032 "		345 "
44.182	44.130 "		345 "
45.273	45.269 "		340 "
46.364	46.368 "		340 "
47.455	47.409 "		335 "
48.545	48.497 "		335 "
49.636	49.591 "		330 "
50.727	50.736 "		330 "
51.818	51.812 "		325 "
52.909	52.714 "		325 "

A6300 A

Module # 40

VARACTOR SENSITIVITY

"A" BAND

T.F. # 1

@ +25°C

FREQ. SHIFT VOLTAGE	LIMITS (KC)		FREQUENCY SHIFT SENSITIVITY 30.000 MHz		40.910 MHz		52.910 MHz	
	(Min)	(Max)	(-)	(+)	(-)	(+)	(-)	(+)
.2 v			58	60	72	75	93	97
.4 v			56	62	70	77	91	99
.6 v			54	64	68	81	89	104
.8 v			53	67	66	82	85	107
1.0 v	225 to 600 Kc per volt		51	69	64	86	84	110
1.2 v			50	71	63	89	81	115
1.4 v			49	75	61	93	79	119
1.6 v			47	78	60	97	77	124
1.8 v			46	81	58	99	74	129
2.0 v	225 to 600 Kc per volt		45	85	56	104	73	135

These limits apply over a (+) or (-) 500 Kc shift range

Comments: AS PER PRINT # SM-B-416427-(STEP 2.5)

A6300 A

Module # 40

ACTOR SENSITIVITY

T.F. # 1

"A" BAND

+ 85 C or - 40 C

@ - 40 °C

. SHIFT AGE	LIMITS (KC)		FREQUENCY SHIFT SENSITIVITY 30.000 MHz		40.910 MHz		52.910 MHz	
	(Min)	(Max)	(-)	(+)	(-)	(+)	(-)	(+)
.2 v			57	60	70	74	91	94
.4 v			55	61	68	75	88	98
.6 v			53	63	67	78	87	101
.8 v			52	66	65	80	83	104
1.0 v	215 to 615 Kc per volt		50	67	62	83	81	107
1.2 v			49	71	61	87	79	112
1.4 v			48	73	60	89	76	116
1.6 v			46	76	58	94	75	120
1.8 v			45	79	56	96	74	126
2.0 v	215 to 615 Kc per volt		43	83	55	102	73	131

These limits apply over a (+) or (-) 500 Kc shift range

Comments: As per SM-B-416427 (2.5)

A6300 A

Module # 40

VARACTOR SENSITIVITY

T.F. # 1

+ 85 C or - 40 C

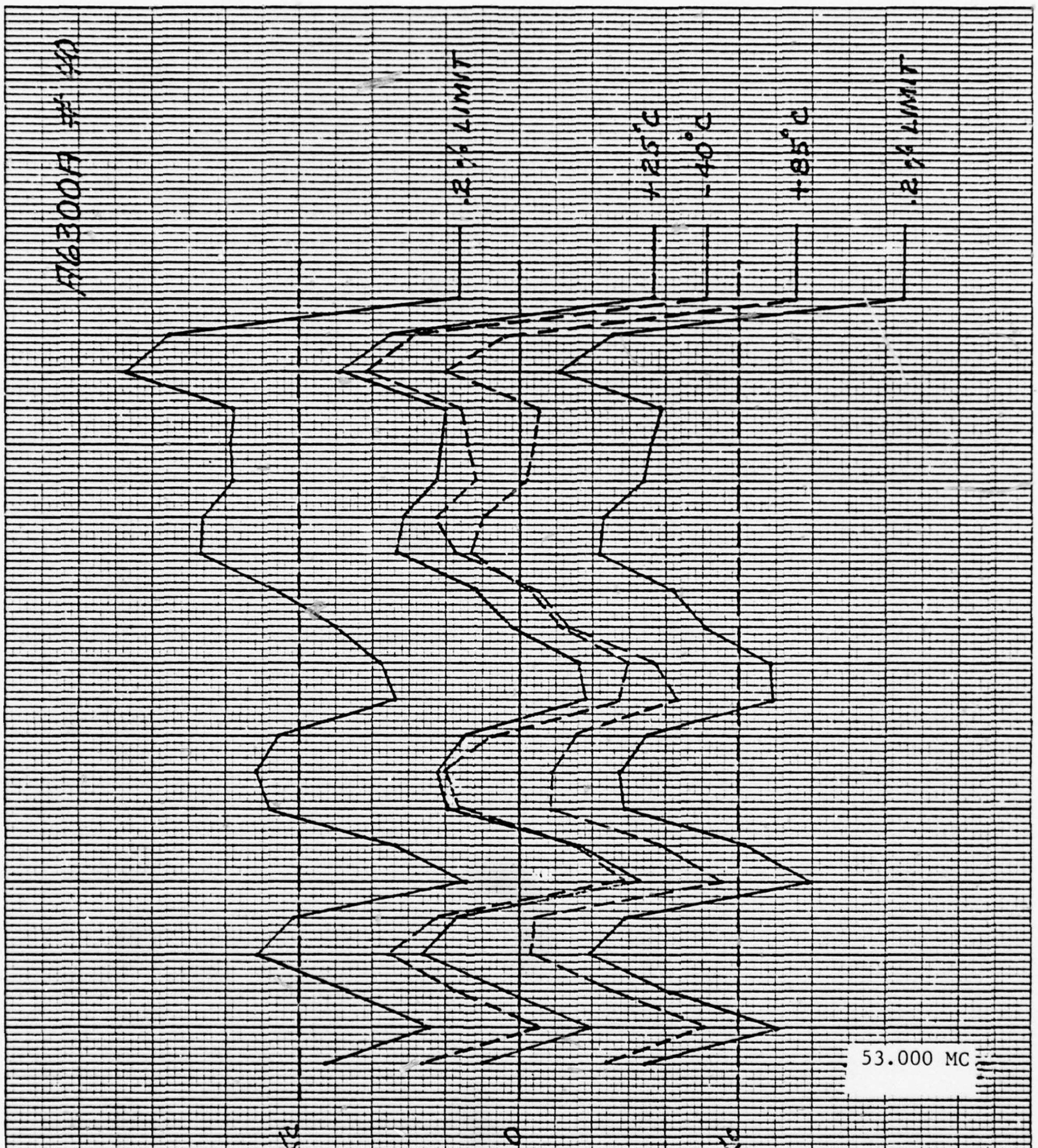
"A" BAND

@ + 85°C

FREQ. SHIFT VOLTAGE	LIMITS (KC) (Min)	(Max)	FREQUENCY SHIFT SENSITIVITY 30.000 MHz (-)	(+)	40.910 MHz (-)	(+)	52.910 MHz (-)	(+)
.2 v			57	61	74	77	95	98
.4 v			56	62	71	76	93	102
.6 v			55	65	70	83	89	105
.8 v			53	67	67	84	87	109
1.0 v	215 to 615 Kc per volt		51	70	65	88	85	112
1.2 v			50	73	64	91	82	117
1.4 v			49	75	62	94	80	121
1.6 v			48	79	60	99	78	127
1.8 v			46	82	59	102	76	131
2.0 v	215 to 615 Kc per volt		45	86	57	106	74	138

These limits apply over a (+) or (-) 500 Kc shift range

Comments: AS PER SM-B-416427 (2.5)


LAB ITE: #1
'B' BAND
+150 Kc
0
-150 Kc
A6300A # 40
.2% LIMIT
+25°C
-40°C
+85°C
.2% LIMIT
53.000 MC

#40

A6300A

"B" Band

@ +25° C

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		RF Output
53.000	53.025 Mc		435 mw
54.091	54.043 "		430 "
55.182	55.190 "		425 "
56.273	56.338 "		420 "
57.364	57.406 "		415 "
58.455	58.374 "		415 "
59.545	59.510 "		410 "
60.636	60.685 "		410 "
61.727	61.782 "		405 "
62.818	62.857 "		395 "
63.909	63.864 "		395 "
65.000	64.959 "		390 "
66.091	66.097 "		390 "
67.182	67.212 "		390 "
68.273	68.356 "		390 "
69.364	69.444 "		390 "
70.455	70.511 "		375 "
71.545	71.599 "		375 "
72.636	72.686 "		372 "
73.727	73.849 "		370 "
74.818	74.905 "		370 "
75.909	75.800 "		370 "

#____# 40____

A6300A

"B" Band

@ -40° C

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		RF Output
53.000	52.940 Mc		470 mw
54.091	53.965 "		465 "
55.182	55.120 "		458 "
56.273	56.264 "		450 "
57.364	57.353 "		445 "
58.455	58.316 "		440 "
59.545	59.448 "		430 "
60.636	60.615 "		425 "
61.727	61.704 "		420 "
62.818	62.779 "		415 "
63.909	63.801 "		415 "
65.000	64.909 "		410 "
66.091	66.057 "		405 "
67.182	67.170 "		405 "
68.273	68.315 "		400 "
69.364	69.420 "		395 "
70.455	70.485 "		395 "
71.545	71.579 "		390 "
72.636	72.677 "		390 "
73.727	73.831 "		390 "
74.818	74.888 "		385 "
75.909	75.780 "		380 "

40

A6300A

"B" Band

@ +85°C

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		RF Output
53.000	53.066 Mc		395 mw
54.091	54.078 "		390 "
55.182	55.226 "		388 "
56.273	56.362 "		385 "
57.364	57.420 "		380 "
58.455	58.383 "		380 "
59.545	59.508 "		375 "
60.636	60.677 "		375 "
61.727	61.777 "		365 "
62.818	62.836 "		360 "
63.909	63.842 "		360 "
65.000	64.926 "		358 "
66.091	66.061 "		355 "
67.182	67.174 "		350 "
68.273	68.306 "		350 "
69.364	69.388 "		348 "
70.455	70.449 "		345 "
71.545	71.535 "		340 "
72.636	72.623 "		340 "
73.727	73.777 "		335 "
74.818	74.828 "		330 "
75.909	75.722 "		330 "

A6300 A

Module # 40

T.F. # 1

@ +25°C

VARACTOR SENSITIVITY

"B" Band

FREQ. SHIFT VOLTAGE	LIMITS (KC)		FREQUENCY SHIFT SENSITIVITY 53.000 MHz		63.910 MHz		75.910 MHz	
	(Min)	(Max)	(-)	(+)	(-)	(+)	(-)	(+)
.2 v			61	63	76	78	93	95
.4 v			60	65	74	80	89	99
.6 v			59	66	72	82	87	103
.8 v			57	68	70	84	84	105
1.0 v	265 to 600 Kc per Volt		56	70	68	86	82	107
1.2 v			55	73	67	89	80	110
1.4 v			54	74	66	92	79	112
1.6 v			52	77	65	94	77	116
1.8 v			51	79	62	98	76	119
2.0 v	265 to 600 Kc per Volt		50	82	61	101	74	123

These limits apply over a (+) or (-) 500 Kc shift range

Comments: AS PER PRINT # SM-B-416427 (2.5)

A6300 A

Module # 40

T.F. # 1

VARACTOR SENSITIVITY

" B " Band

+ 85 C or - 40 C

@ -40° C

FREQ. SHIFT VOLTAGE	LIMITS (KC)		FREQUENCY SHIFT SENSITIVITY 53.000 MHz		63.910 MHz		75.910 MHz	
	(Min)	(Max)	(-)	(+)	(-)	(+)	(-)	(+)
.2 v			62	63	76	76	91	93
.4 v			60	64	74	80	89	96
.6 v			58	66	73	82	87	99
.8 v			57	68	71	84	85	101
1.0 v	255 to 610 Kc per Volt		56	69	69	86	83	104
1.2 v			54	72	67	90	81	106
1.4 v			53	73	66	92	79	110
1.6 v			52	76	65	95	78	114
1.8 v			51	78	64	98	77	117
2.0 v	255 to 610 Kc per Volt		50	81	62	101	75	121

These limits apply over a (+) or (-) 500 Kc shift range

Comments: AS PER SM-B-416427 (25)

A6300 A

Module # 40

VARACTOR SENSITIVITY

T.F. # 1

"B" Band

+ 85 C or - 40 C

@ +85°C

FREQ. SHIFT VOLTAGE	LIMITS (KC)		FREQUENCY SHIFT SENSITIVITY 53.000 MHz		63.910 MHz		75.910 MHz	
	(Min)	(Max)	(-)	(+)	(-)	(+)	(-)	(+
.2 v			61	63	74	77	91	94
.4 v			60	65	73	79	89	96
.6 v			59	66	72	82	87	101
.8 v			57	68	69	83	85	102
1.0 v	255 to 610 Kc per Volt		56	70	68	86	82	105
1.2 v			55	72	66	88	81	109
1.4 v			54	74	65	92	80	111
1.6 v			52	77	64	94	77	117
1.8 v			51	79	62	97	76	118
2.0 v	255 to 610 Kc per Volt		50	82	61	101	75	124

These limits apply over a (+) or (-) 500 Kc shift range

Comments: AS PER PRINT # SM-B-416427 (2.5)

TEMPERATURE

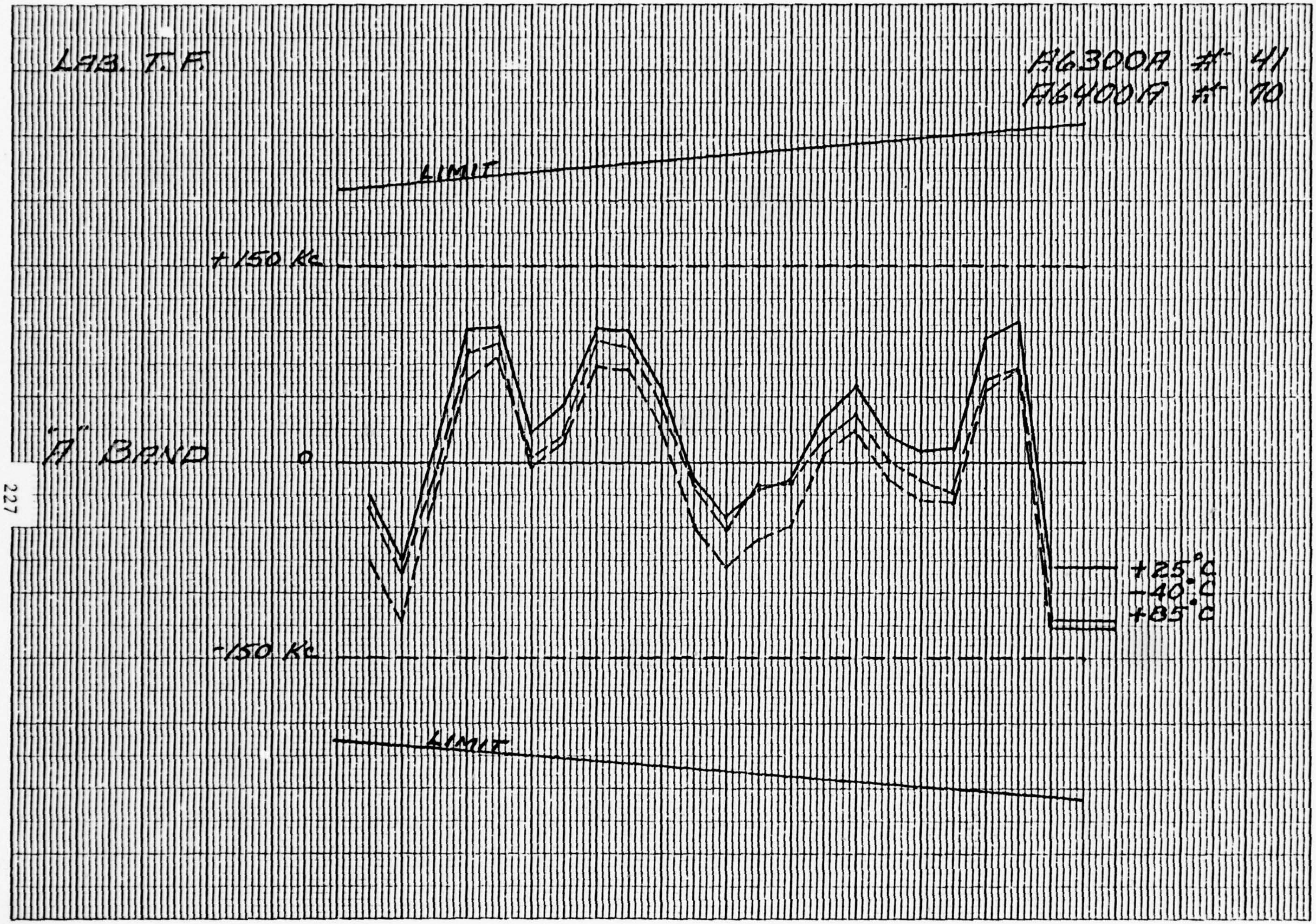
@ +25°C, +85°C & -40°C

A6300A- MODULES # 41 & 51

O.B. LEVEL TESTS -(AS PER PRINT # SM-B-416421)
MODULES TESTED WITH A6400A # 70
TRACKING, RF OUTPUT, & VARACTOR SENSITIVITY @ ROOM, HOT, & COLD TEMP.

ALIGNED & TESTED ON CALIBRATED LAB T.F. # 1

3



LAB. T.F.
A6300A # 41
A6400A # 70
LIMIT
+150 Kc
"A" BAND
0
+25°C
-40°C
+85°C
-150 Kc
LIMIT

41

A6300A

"A" Band

W/A6400A #70

@ +25°C

Calculated Straight Line Frequency	Actual Frequency ± 150 KC	High Power Output	Low Power Output
30.000	29.975 Mc	2.23 VOLTS	420 MW
31.091	31.018 "	2.26 "	430 "
32.182	32.193 "	2.32 "	435 "
33.273	33.374 "	2.37 "	450 "
34.364	34.467 "	2.41 "	470 "
35.455	35.478 "	2.45 "	480 "
36.545	36.584 "	2.45 "	480 "
37.636	37.738 "	2.49 "	480 "
38.727	38.828 "	2.50 "	480 "
39.818	39.875 "	2.50 "	480 "
40.909	40.898 "	2.49 "	475 "
42.000	41.959 "	2.46 "	470 "
43.091	43.070 "	2.42 "	465 "
44.182	44.169 "	2.36 "	462 "
45.273	45.307 "	2.30 "	455 "
46.364	46.422 "	2.25 "	445 "
47.455	47.476 "	2.19 "	430 "
48.545	48.554 "	2.14 "	425 "
49.636	49.647 "	2.09 "	415 "
50.727	50.822 "	2.02 "	405 "
51.818	51.925 "	1.96 "	395 "
52.909	52.829 "	1.92 "	385 "

41

A6300A

"A" Band

W/A6400A #70

@ -40 °C

Calculated Straight Line Frequency	Actual Frequency ± 150 KC	High Power Output	Low Power Output
30.000	29.924 Mc	2.22 VOLTS	420 mv
31.091	30.970 "	2.25 "	421 "
32.182	32.155 "	2.32 "	430 "
33.273	33.340 "	2.35 "	440 "
34.364	34.442 "	2.42 "	455 "
35.455	35.459 "	2.45 "	470 "
36.545	36.565 "	2.47 "	470 "
37.636	37.727 "	2.49 "	472 "
38.727	38.814 "	2.50 "	472 "
39.818	39.862 "	2.50 "	469 "
40.909	40.890 "	2.50 "	465 "
42.000	41.949 "	2.48 "	460 "
43.091	43.074 "	2.42 "	455 "
44.182	44.165 "	2.38 "	450 "
45.273	45.290 "	2.30 "	440 "
46.364	46.400 "	2.25 "	430 "
47.455	47.455 "	2.18 "	425 "
48.545	48.531 "	2.12 "	420 "
49.636	49.612 "	2.05 "	420 "
50.727	50.789 "	1.99 "	410 "
51.818	51.888 "	1.92 "	400 "
52.909	52.787 "	1.90 "	385 "

_41_

A6300A

"A" Band

w/A6400A #70
@ +85°C

Calculated Straight Line Frequency	Actual Frequency ± 150 KC	High Power Output	Low Power Output
30.000	29.966 Mc	2.10 VOLTS	412 mv
31.091	31.006 "	2.15 "	420 "
32.182	32.176 "	2.19 "	430 "
33.273	33.356 "	2.25 "	445 "
34.364	34.454 "	2.25 "	455 "
35.455	35.452 "	2.28 "	460 "
36.545	36.560 "	2.30 "	460 "
37.636	37.709 "	2.32 "	460 "
38.727	38.797 "	2.32 "	460 "
39.818	39.845 "	2.30 "	455 "
40.909	40.860 "	2.28 "	455 "
42.000	41.920 "	2.25 "	445 "
43.091	43.032 "	2.21 "	435 "
44.182	44.134 "	2.18 "	430 "
45.273	45.279 "	2.12 "	420 "
46.364	46.388 "	2.08 "	410 "
47.455	47.442 "	2.02 "	395 "
48.545	48.516 "	1.98 "	385 "
49.636	49.605 "	1.92 "	375 "
50.727	50.782 "	1.85 "	360 "
51.818	51.888 "	1.80 "	350 "
52.909	52.785 "	1.78 "	340 "

A6000

A6300A 41

A6400A 70

VARACTOR SENSITIVITY

"A" BAND

@ +25°C

REQ. SHIFT VOLTAGE	LIMITS (KC) (Min)	(Max)	FREQUENCY SHIFT SENSITIVITY 30.000 MHz (-)	(+)	40.910 MHz (-)	(+)	52.910 MHz (-)	(+)
.2 v			58	60	71	74	94	96
.4 v			56	61	70	77	91	100
.6 v			54	64	67	80	88	104
.8 v			53	67	66	83	85	109
1.0 v	**		51	68	63	86	83	111
1.2 v	***		50	73	62	88	81	115
1.4 v			49	75	60	91	78	120
1.6 v			47	78	59	96	77	124
1.8 v			46	83	57	100	74	130
2.0 v			45	85	56	105	73	136

These limits apply over a (+) or (-) 500 Kc shift range

** Incr Sens for Voltages less than ± 1.0V 225 - 600 Kc

*** Incr Sens for Voltages equal to and greater than ± 1.0 V 215 - 625 Kc

Comments: AS PER PRINT # SM-B-416421 (2.1.3.1)

A6000

A6300A 41

A6400A 70

VARACTOR SENSITIVITY

"A" BAND

@ -40°C

FREQ. SHIFT VOLTAGE	LIMITS (KC)		FREQUENCY SHIFT SENSITIVITY 30.000 MHz		40.910 MHz		52.910 MHz	
	(Min)	(Max)	(-)	(+)	(-)	(+)	(-)	(+
.2 v			56	60	70	72	92	95
.4 v			55	62	68	75	89	99
.6 v			54	64	67	77	88	102
.8 v	**		52	67	64	80	84	105
1.0 v	***		50	69	63	84	82	109
1.2 v			49	72	61	87	80	113
1.4 v			48	74	59	92	78	116
1.6 v			46	75	58	97	75	124
1.8 v			45	77	56	99	74	126
2.0 v			44	80	55	104	72	133

These limits apply over a (+) or (-) 500 Kc shift range

** Incr Sens for Voltages less than ± 1.0V 215 - 615 Kc

*** Incr Sens for Voltages equal to and greater than ± 1.0V 205 - 640 Kc

Comments: AS PER PRINT # SM-B-416421 (2.1.3.1)

A6000

A6300A 41

A6400A 70

VARACTOR SENSITIVITY

"A" BAND

@ +85°C

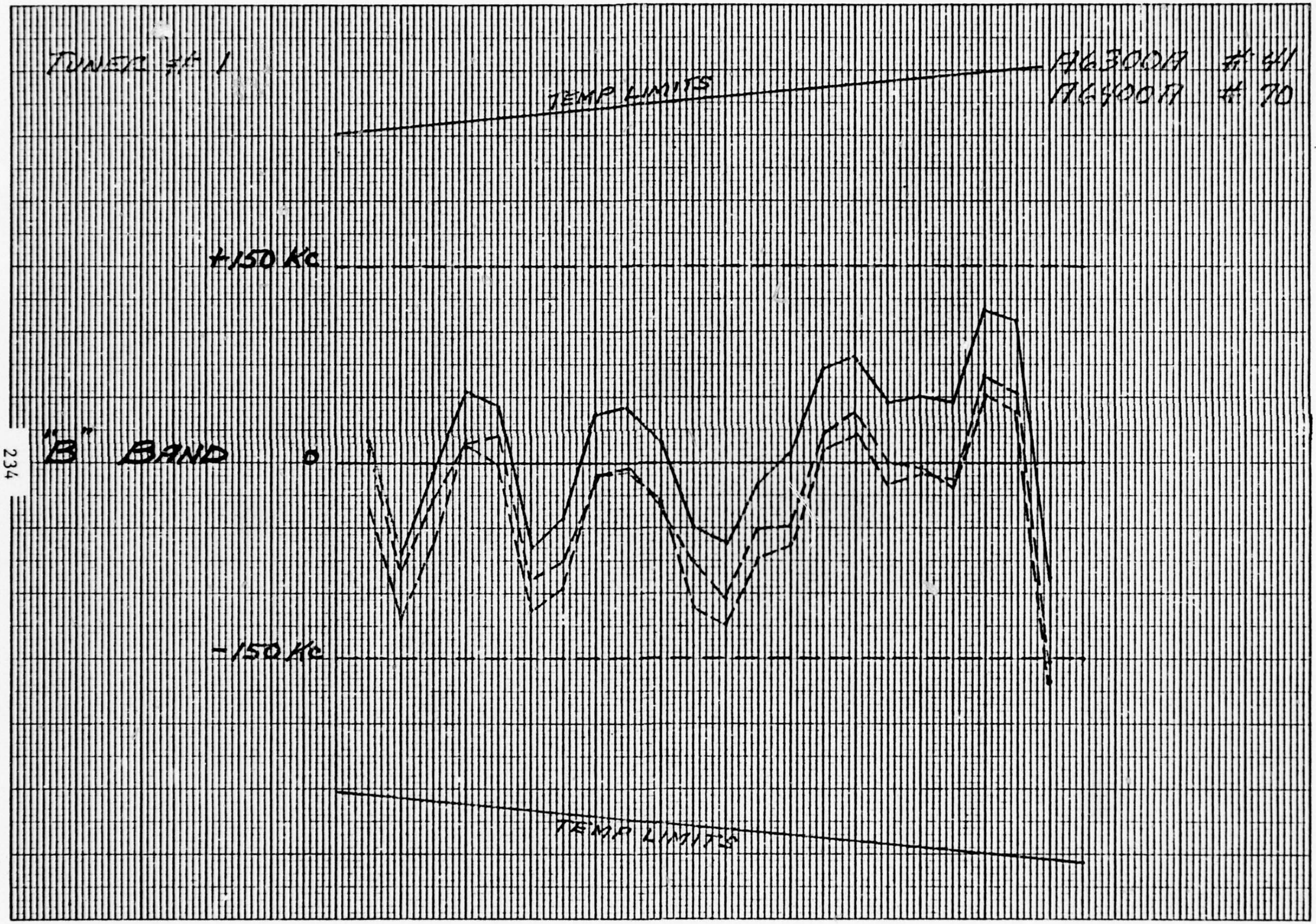
FREQ. SHIFT VOLTAGE	LIMITS (KC)		FREQUENCY SHIFT SENSITIVITY 30.000 MHz		40.910 MHz		52.910 MHz	
	(Min)	(Max)	(-)	(+)	(-)	(+)	(-)	(+
.2 v			58	60	74	77	94	98
.4 v			56	63	72	80	92	101
.6 v			55	64	69	83	89	104
.8 v	**		53	67	67	85	86	108
1.0 v	***		52	69	65	88	84	112
1.2 v			50	72	63	93	81	116
1.4 v			49	75	62	95	79	121
1.6 v			47	78	60	100	77	126
1.8 v			46	81	58	103	75	131
2.0 v			44	85	57	108	74	137

These limits apply over a (+) or (-) 500 Kc shift range

** Incr Sens for Voltages less than ± 1.0V 215 - 615 Kc

*** Incr Sens for Voltages equal to and greater than ± 1.0V 205 - 640 Kc

Comments: AS PER PRINT # SM-B-416421 (2.1.3.1)


TUNER # 1
A6300A # 41
A6400A # 70
TEMP LIMITS
+150 Kc
"B" BAND
0
-150 Kc
TEMP LIMITS

41

W/A6400A #70

@ +25° C

A6300A

"B" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC	High Power Output	Low Power Output
53.000	53.018 Mc	2.35 v	445 mw
54.091	54.024 "	2.37 "	440 "
55.182	55.175 "	2.40 "	425 "
56.273	56.328 "	2.40 "	415 "
57.364	57.407 "	2.40 "	410 "
58.455	58.391 "	2.39 "	405 "
59.545	59.502 "	2.36 "	395 "
60.636	60.674 "	2.34 "	385 "
61.727	61.768 "	2.32 "	380 "
62.818	62.833 "	2.32 "	370 "
63.909	63.860 "	2.32 "	365 "
65.000	64.929 "	2.29 "	360 "
66.091	66.075 "	2.26 "	355 "
67.182	67.189 "	2.25 "	352 "
68.273	68.345 "	2.22 "	345 "
69.364	69.446 "	2.00 "	340 "
70.455	70.502 "	2.18 "	330 "
71.545	71.596 "	2.16 "	320 "
72.636	72.684 "	2.15 "	315 "
73.727	73.845 "	2.10 "	310 "
74.818	74.922 "	2.07 "	300 "
75.909	75.822 "	2.05 "	290 "

41

A6300A

"B" Band

W/A6400A #70
@ +85°C

Calculated Straight Line Frequency	Actual Frequency ± 150 KC	High Power Output	Low Power Output
53.000	53.010 Mc	2.25 v	430 mv
54.091	54.010 "	2.25 "	420 "
55.182	55.154 "	2.25 "	410 "
56.273	56.288 "	2.25 "	400 "
57.364	57.364 "	2.25 "	390 "
58.455	58.343 "	2.20 "	380 "
59.545	59.449 "	2.20 "	370 "
60.636	60.626 "	2.20 "	365 "
61.727	61.720 "	2.18 "	360 "
62.818	62.789 "	2.18 "	350 "
63.909	63.799 "	2.15 "	345 "
65.000	64.878 "	2.13 "	340 "
66.091	66.019 "	2.10 "	335 "
67.182	67.127 "	2.09 "	330 "
68.273	68.283 "	2.08 "	320 "
69.364	69.385 "	2.05 "	315 "
70.455	70.440 "	2.05 "	310 "
71.545	71.538 "	2.05 "	300 "
72.636	72.624 "	2.00 "	295 "
73.727	73.794 "	1.98 "	285 "
74.818	74.872 "	1.95 "	275 "
75.909	75.757 "	1.92 "	270 "

41
w/A6400A #70
@ -40° C

A6300A

"B" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC	High Power Output	Low Power Output
53.000	52.950 Mc	2.37 V	450 mv
54.091	53.957 "	2.42 "	440 "
55.182	55.102 "	2.45 "	430 "
56.273	56.296 "	2.47 "	425 "
57.364	57.374 "	2.47 "	420 "
58.455	58.360 "	2.47 "	415 "
59.545	59.474 "	2.45 "	400 "
60.636	60.621 "	2.40 "	390 "
61.727	61.715 "	2.40 "	380 "
62.818	62.789 "	2.39 "	370 "
63.909	63.904 "	2.35 "	360 "
65.000	64.897 "	2.31 "	350 "
66.091	66.035 "	2.30 "	340 "
67.182	67.137 "	2.27 "	340 "
68.273	68.294 "	2.25 "	340 "
69.364	69.401 "	2.25 "	335 "
70.455	70.457 "	2.25 "	330 "
71.545	71.537 "	2.19 "	320 "
72.636	72.621 "	2.15 "	310 "
73.727	73.790 "	2.10 "	305 "
74.818	74.876 "	2.07 "	300 "
75.909	75.742 "	2.05 "	290 "

A 6000

A6300A 41

A6400A 70

VARACTOR SENSITIVITY

@ +25°C

" B " Band

FREQ. SHIFT VOLTAGE	LIMITS (KC) (Min)	(Max)	FREQUENCY SHIFT SENSITIVITY 53.000 MHz (-)	(+)	63.910 MHz (-)	(+)	75.910 MHz (-)	(+)
.2 v			61	63	75	77	92	97
.4 v			60	65	73	80	90	98
.6 v			58	66	72	82	88	101
.8 v	**		57	68	70	83	85	103
1.0 v	***		56	70	68	86	83	105
1.2 v			55	72	67	89	82	108
1.4 v			54	74	65	92	80	111
1.6 v			52	76	64	95	78	116
1.8 v			51	77	63	97	77	118
2.0 v			50	82	61	102	75	123

These limits apply over a (+) or (-) 500 Kc shift range

** Incr Sens for Voltages less than ± 1.0V 265 - 600 Kc

*** Incr Sens for Voltages equal to and greater than ± 1.0V 250 - 600 Kc

Comments: AS PER PRINT # SM-B-416421 (2.1.3.1)

A 6000

A6300A 41

A6400A 70

@ -40°C

VARACTOR SENSITIVITY

" B " Band

FREQ. SHIFT VOLTAGE	LIMITS (KC)		FREQUENCY SHIFT SENSITIVITY 53.000 MHz		63.910 MHz		75.910 MHz	
	(Min)	(Max)	(-)	(+)	(-)	(+)	(-)	(+)
.2 v			61	62	76	78	91	93
.4 v			60	64	74	80	89	96
.6 v			58	67	73	83	87	97
.8 v	**		57	68	70	84	86	100
1.0 v	***		56	69	69	86	83	103
1.2 v			54	72	67	89	81	106
1.4 v			53	73	66	92	79	109
1.6 v			52	76	64	95	78	113
1.8 v			51	79	63	97	76	115
2.0 v			50	81	61	101	75	121

These limits apply over a (+) or (-) 500 Kc shift range

** Incr Sens for Voltages less than ± 1.0V 255 - 610 Kc

*** Incr Sens for Voltages equal to and greater than ± 1.0V 240 - 610 Kc

Comments: AS PER PRINT # SM-B-416421 (2.1.3.1)

A 6000

A6300A 41

A6400A 70

@ +85°c

VARACTOR SENSITIVITY

" B " Band

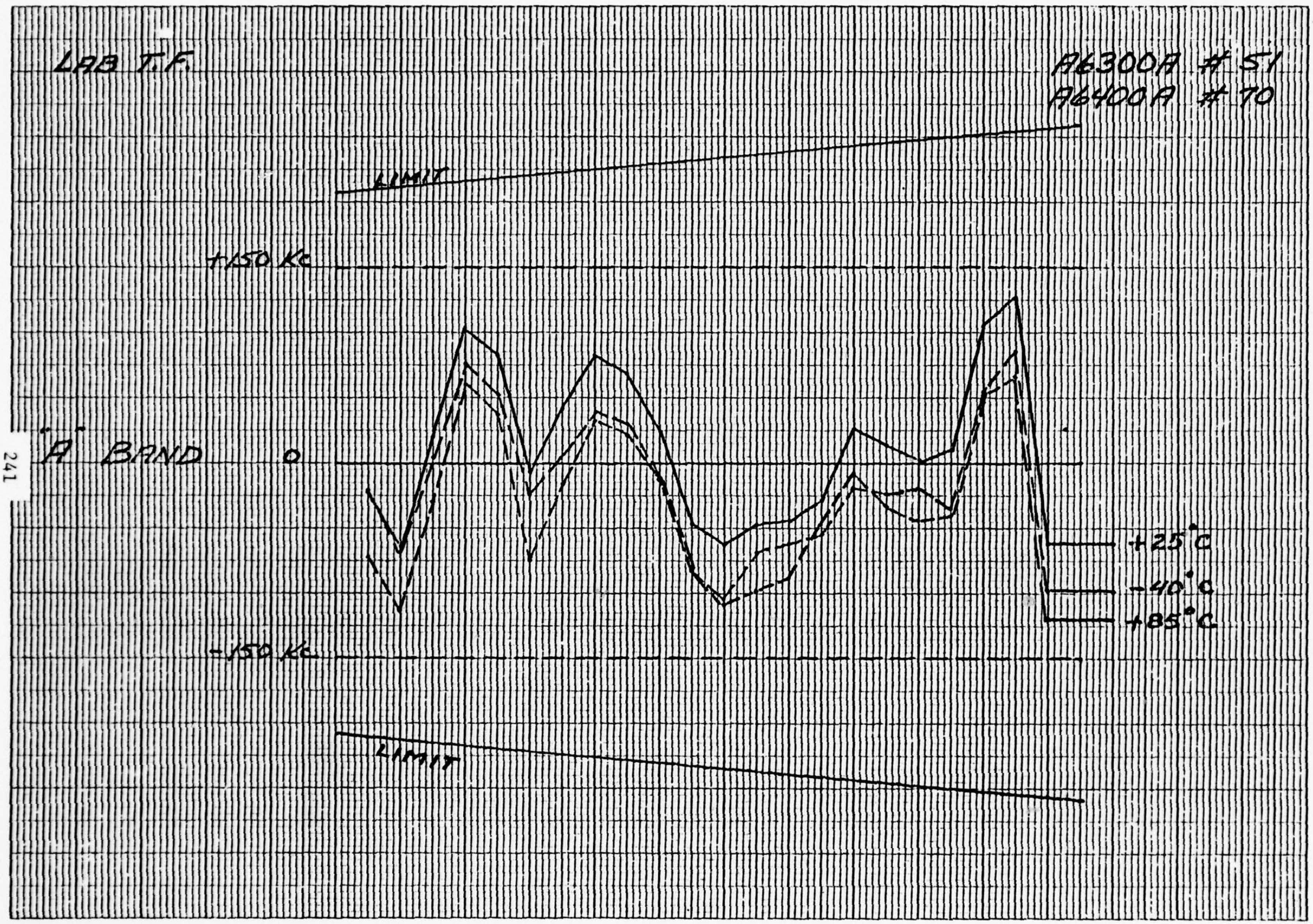
FREQ. SHIFT VOLTAGE	LIMITS (KC)		FREQUENCY SHIFT SENSITIVITY 53.000 MHz		63.910 MHz		75.910 MHz	
	(Min)	(Max)	(-)	(+)	(-)	(+)	(-)	(+)
.2 v			61	62	75	77	92	98
.4 v			60	65	73	78	90	99
.6 v			59	66	72	81	88	102
.8 v	**		57	68	69	83	85	103
1.0 v	***		56	70	68	85	83	106
1.2 v			54	72	66	89	82	108
1.4 v			53	74	65	91	80	113
1.6 v			52	77	64	94	78	116
1.8 v			51	78	62	97	77	118
2.0 v			50	82	61	100	75	124

These limits apply over a (+) or (-) 500 Kc shift range

** Incr Sens for Voltages less than ± 1.0V 255 - 610 Kc

*** Incr Sens for Voltages equal to and greater than ± 1.0V 240 - 610 Kc

Comments: AS PER PRINT # SM-B-416421 (2.1.3.1)


LAB T.F.
A6300A # 51
A6400A # 70
LIMIT
+150 Kc
"A" BAND
0
-150 Kc
+25°C
-40°C
+85°C
LIMIT

\# 51

A6300A

"A" Band

W/A6400A #1

@ +25°C

Calculated Straight Line Frequency	Actual Frequency ± 150 KC	High Power Output	Low Power Output
30.000	29.978 Mc	2.18 VOLTS	405 mv
31.091	31.026 "	2.20 "	400 "
32.182	32.202 "	2.24 "	400 "
33.273	33.377 "	2.26 "	405 "
34.364	34.447 "	2.28 "	410 "
35.455	35.449 "	2.30 "	415 "
36.545	36.587 "	2.30 "	420 "
37.636	37.718 "	2.34 "	420 "
38.727	38.796 "	2.34 "	422 "
39.818	39.842 "	2.34 "	425 "
40.909	40.863 "	2.32 "	425 "
42.000	41.938 "	2.30 "	420 "
43.091	43.044 "	2.28 "	420 "
44.182	44.142 "	2.24 "	420 "
45.273	45.245 "	2.19 "	415 "
46.364	46.390 "	2.12 "	405 "
47.455	47.470 "	2.06 "	395 "
48.545	48.546 "	2.01 "	390 "
49.636	49.646 "	1.95 "	390 "
50.727	50.832 "	1.90 "	375 "
51.818	51.945 "	1.85 "	370 "
52.909	52.848 "	1.82 "	365 "

51

A6300A

"A" Band

w/A6400A #70
@ -40° C

Calculated Straight Line Frequency	Actual Frequency ± 150 KC	High Power Output	Low Power Output
30.000	29.929 Mc	2.25 VOLTS	425 mv
31.091	30.977 "	2.28 "	410 "
32.182	32.152 "	2.32 "	415 "
33.273	33.333 "	2.35 "	415 "
34.364	34.402 "	2.40 "	420 "
35.455	35.380 "	2.42 "	425 "
36.545	36.529 "	2.42 "	425 "
37.636	37.668 "	2.44 "	425 "
38.727	38.748 "	2.45 "	425 "
39.818	39.806 "	2.45 "	425 "
40.909	40.825 "	2.41 "	415 "
42.000	41.897 "	2.38 "	410 "
43.091	43.022 "	2.32 "	405 "
44.182	44.120 "	2.28 "	405 "
45.273	45.218 "	2.25 "	410 "
46.364	46.345 "	2.15 "	405 "
47.455	47.431 "	2.08 "	395 "
48.545	48.526 "	2.02 "	390 "
49.636	49.601 "	1.98 "	385 "
50.727	50.782 "	1.90 "	385 "
51.818	51.904 "	1.85 "	380 "
52.909	52.812 "	1.82 "	370 "

51

A6300A

"A" Band

W/A6400A # 7[illegible]

@ +85°C

Calculated Straight Line Frequency	Actual Frequency ± 150 KC	High Power Output	Low Power Output
30.000	29.979 Mc	2.05 VOLTS	390 mv
31.091	31.023 "	2.10 "	385 "
32.182	32.186 "	2.12 "	390 "
33.273	33.349 "	2.15 "	400 "
34.364	34.426 "	2.18 "	405 "
35.455	35.431 "	2.18 "	410 "
36.545	36.549 "	2.18 "	412 "
37.636	37.675 "	2.22 "	415 "
38.727	38.757 "	2.22 "	418 "
39.818	39.804 "	2.22 "	420 "
40.909	40.826 "	2.20 "	420 "
42.000	41.893 "	2.18 "	415 "
43.091	42.994 "	2.15 "	410 "
44.182	44.094 "	2.12 "	405 "
45.273	45.226 "	2.10 "	405 "
46.364	46.357 "	2.05 "	395 "
47.455	47.422 "	2.00 "	380 "
48.545	48.501 "	1.95 "	370 "
49.636	49.596 "	1.90 "	365 "
50.727	50.779 "	1.87 "	353 "
51.818	51.886 "	1.82 "	345 "
52.909	52.790 "	1.80 "	340 "

A6000

A6300A 51

VARACTOR SENSITIVITY

A6400A 70

"A" BAND

@ +25°C

FREQ. SHIFT VOLTAGE	LIMITS (KC)		FREQUENCY SHIFT SENSITIVITY 30.000 MHz		40.910 MHz		52.910 MHz	
	(Min)	(Max)	(-)	(+)	(-)	(+)	(-)	(+
.2 v			55	57	63	64	84	90
.4 v			53	59	62	66	81	94
.6 v			52	61	60	67	79	96
.8 v			50	63	58	68	77	100
1.0 v		**	49	66	57	69	75	103
1.2 v		***	48	68	56	71	73	107
1.4 v			47	71	55	74	70	111
1.6 v			46	74	54	76	69	116
1.8 v			44	77	52	78	67	120
2.0 v			43	80	51	81	65	126

These limits apply over a (+) or (-) 500 Kc shift range

** Incr Sens for Voltages less than ± 1.0V 225 - 600 Kc

*** Incr Sens for Voltages equal to and greater than ± 1.0 V 215 - 625 Kc

Comments: AS PER PRINT # SM-B-416421 (2.1.3.1)

A6000

A6300A 51

A6400A 70

VARACTOR SENSITIVITY

"A" BAND

@-40°C

FREQ. SHIFT VOLTAGE	LIMITS (KC)		FREQUENCY SHIFT SENSITIVITY 30.000 MHz		40.910 MHz		52.910 MHz	
	(Min)	(Max)	(-)	(+)	(-)	(+)	(-)	(+
.2 v			59	59	67	68	91	93
.4 v			57	61	65	72	88	97
.6 v			56	63	63	75	86	99
.8 v	**		53	64	62	77	83	103
1.0 v	***		51	66	60	82	80	106
1.2 v			50	69	58	86	78	110
1.4 v			47	72	57	92	77	116
1.6 v			46	78	56	97	74	120
1.8 v			44	83	55	102	72	125
2.0 v			43	87	53	106	70	131

These limits apply over a (+) or (-) 500 Kc shift range

** Incr Sens for Voltages less than ± 1.0V 215 - 615 Kc

*** Incr Sens for Voltages equal to and greater than ± 1.0V 205 - 640 Kc

Comments: AS PER PRINT # SM-B-416421 (2.1.3.1)

A6000

A6300A #51

VARACTOR SENSITIVITY

A6400A #70

"A" BAND

@ +85°C

FREQ. SHIFT VOLTAGE	LIMITS (KC)		FREQUENCY SHIFT SENSITIVITY 30.000 MHz		40.910 MHz		52.910 MHz	
	(Min)	(Max)	(-)	(+)	(-)	(+)	(-)	(+
.2 v			58	61	72	74	93	97
.4 v			56	62	71	77	90	100
.6 v			55	65	68	79	89	103
.8 v	**		54	67	66	82	85	107
1.0 v	***		51	70	64	84	81	110
1.2 v			50	72	63	88	80	116
1.4 v			48	76	60	90	79	120
1.6 v			47	79	59	95	77	125
1.8 v			46	83	57	99	73	130
2.0 v			44	86	56	105	72	137

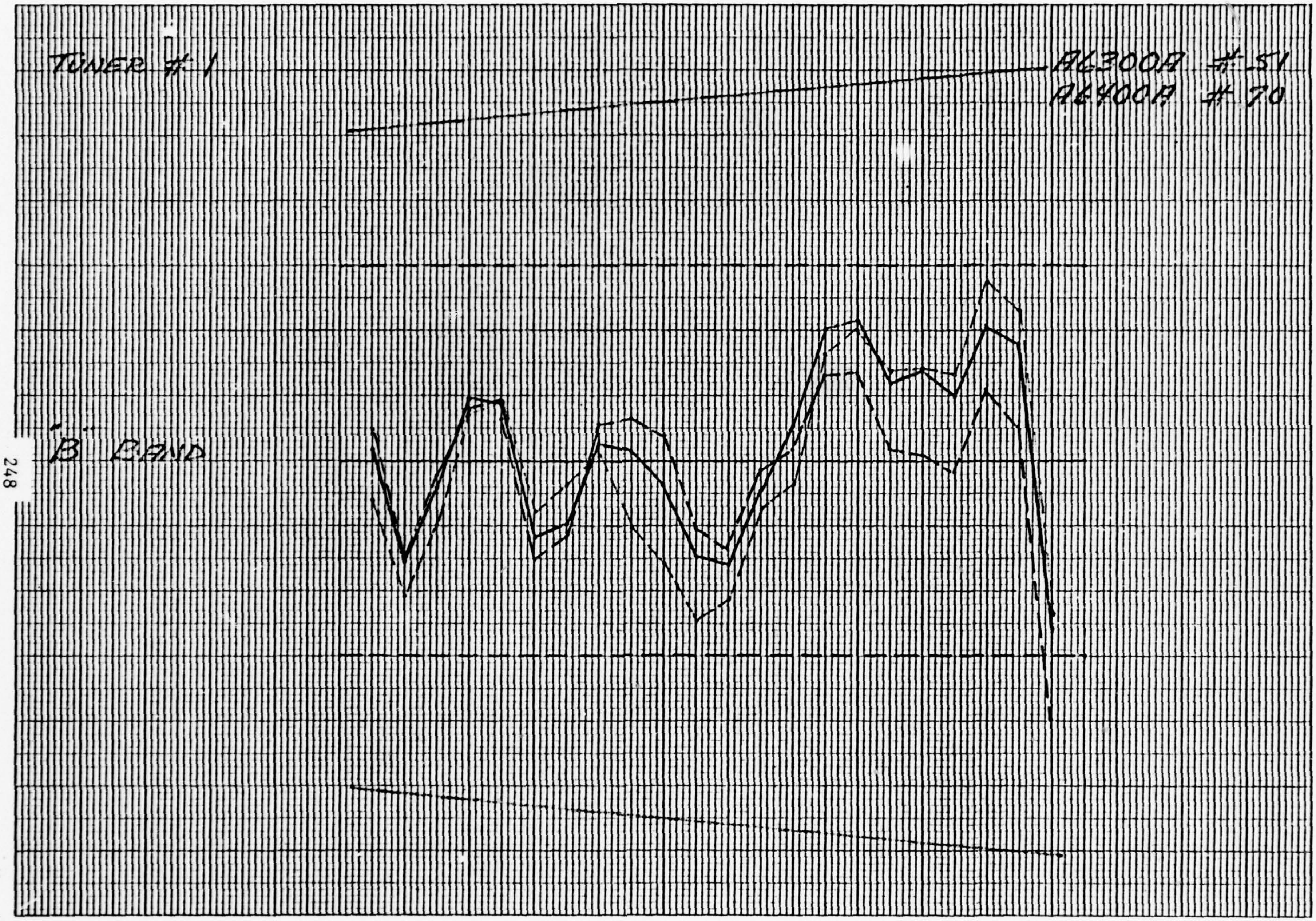
These limits apply over a (+) or (-) 500 Kc shift range

** Incr Sens for Voltages less than ± 1.0V 215 - 615 Kc

*** Incr Sens for Voltages equal to and greater than ± 1.0V 205 - 640 Kc

Comments: AS PER PRINT # SM-B-416421 (2.1.3.1)

K+E 10 X 10 TO ½ INCH 7 X 10 INCHES KEUFFEL & ESSER CO. MADE IN U.S.A. 46 1323



\#51

A6300A

"B" Band

w/A6400A #70

@ +25°C

Calculated Straight Line Frequency	Actual Frequency ± 150 KC	High Power Output	Low Power Output
53.000	53.010 Mc	2.35 v	450 mv
54.091	54.016 "	2.38 "	440 "
55.182	55.162 "	2.40 "	430 "
56.273	56.321 "	2.40 "	420 "
57.364	57.408 "	2.40 "	410 "
58.455	58.397 "	2.40 "	400 "
59.545	59.497 "	2.37 "	395 "
60.636	60.650 "	2.37 "	395 "
61.727	61.735 "	2.37 "	390 "
62.818	62.799 "	2.37 "	380 "
63.909	63.835 "	2.35 "	370 "
65.000	64.920 "	2.30 "	365 "
66.091	66.069 "	2.29 "	365 "
67.182	67.208 "	2.27 "	365 "
68.273	68.374 "	2.27 "	360 "
69.364	69.472 "	2.27 "	360 "
70.455	70.515 "	2.25 "	350 "
71.545	71.615 "	2.25 "	349 "
72.636	72.686 "	2.22 "	340 "
73.727	73.831 "	2.20 "	340 "
74.818	74.908 "	2.20 "	335 "
75.909	75.780 "	2.17 "	330 "

\# 51

A6300A

"B" Band

W/A6400A #70

@ +85°C

Calculated Straight Line Frequency	Actual Frequency ± 150 KC	High Power Output	Low Power Output
53.000	53.025 Mc	2.25 v	420 mv
54.091	54.017 "	2.25 "	410 "
55.182	55.170 "	2.27 "	400 "
56.273	56.312 "	2.27 "	390 "
57.364	57.396 "	2.25 "	380 "
58.455	58.380 "	2.22 "	375 "
59.545	59.487 "	2.20 "	370 "
60.636	60.664 "	2.20 "	365 "
61.727	61.760 "	2.20 "	360 "
62.818	62.838 "	2.19 "	355 "
63.909	63.858 "	2.17 "	350 "
65.000	64.931 "	2.15 "	350 "
66.091	66.084 "	2.13 "	340 "
67.182	67.191 "	2.12 "	335 "
68.273	68.344 "	2.10 "	330 "
69.364	69.431 "	2.10 "	325 "
70.455	70.464 "	2.10 "	320 "
71.545	71.550 "	2.09 "	315 "
72.636	72.627 "	2.06 "	310 "
73.727	73.782 "	2.05 "	305 "
74.818	74.844 "	2.02 "	300 "
75.909	75.711 "	2.01 "	295 "

\# 51

W/A6400A # 70

@ -40°C

A6300A

"B" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC	High Power Output	Low Power Output
53.000	52.971 Mc	2.35 v	450 mv
54.091	53.982 "	2.40 "	440 "
55.182	55.133 "	2.45 "	430 "
56.273	56.309 "	2.45 "	420 "
57.364	57.409 "	2.47 "	415 "
58.455	58.416 "	2.47 "	410 "
59.545	59.527 "	2.45 "	400 "
60.636	60.639 "	2.42 "	395 "
61.727	61.676 "	2.40 "	385 "
62.818	62.739 "	2.40 "	375 "
63.909	63.786 "	2.39 "	365 "
65.000	64.892 "	2.37 "	355 "
66.091	66.055 "	2.35 "	350 "
67.182	67.164 "	2.32 "	350 "
68.273	68.355 "	2.31 "	350 "
69.364	69.465 "	2.30 "	350 "
70.455	70.524 "	2.30 "	350 "
71.545	71.616 "	2.29 "	345 "
72.636	72.707 "	2.27 "	335 "
73.727	73.866 "	2.25 "	335 "
74.818	74.934 "	2.21 "	330 "
75.909	75.793 "	2.20 "	325 "

A 6000

A6300A 51

A6400A 70

@ +25°C

VARACTOR SENSITIVITY

" B " Band

REQ. SHIFT VOLTAGE	LIMITS (KC)		FREQUENCY SHIFT SENSITIVITY 53.000 MHz		63.910 MHz		75.910 MHz	
	(Min)	(Max)	(-)	(+)	(-)	(+)	(-)	(+)
.2 v			61	63	75	76	94	94
.4 v			59	64	73	79	91	99
.6 v			58	66	72	82	90	103
.8 v	* *		57	67	69	83	87	108
1.0 v	* * *		56	69	68	85	86	111
1.2 v			54	72	66	89	84	113
1.4 v			53	74	65	92	82	116
1.6 v			52	76	63	95	80	119
1.8 v			51	77	62	97	79	120
2.0 v			50	82	61	102	78	124

These limits apply over a (+) or (-) 500 Kc shift range

** Incr Sens for Voltages less than ± 1.0V 265 - 600 Kc

*** Incr Sens for Voltages equal to and greater than ± 1.0V 250 - 600 Kc

Comments: AS PER PRINT # SM-B-416421 (2.1.3.1)

A 6000

A6300A 51

A6400A 70

@ -40°C

VARACTOR SENSITIVITY

" B " Band

FREQ. SHIFT VOLTAGE	LIMITS (KC)		FREQUENCY SHIFT SENSITIVITY 53.000 MHz		63.910 MHz		75.910 MHz	
	(Min)	(Max)	(-)	(+)	(-)	(+)	(-)	(+)
.2 v			61	63	78	79	91	95
.4 v			60	65	75	82	90	98
.6 v			59	67	73	84	89	101
.8 v	* *		56	68	72	86	86	103
1.0 v	* * *		55	70	70	89	84	105
1.2 v			54	73	68	91	83	109
1.4 v			53	75	66	94	81	112
1.6 v			52	78	64	98	80	117
1.8 v			51	81	63	99	77	119
2.0 v			50	83	61	104	76	125

These limits apply over a (+) or (-) 500 Kc shift range

** Incr Sens for Voltages less than ± 1.0V 255 - 610 Kc

*** Incr Sens for Voltages equal to and greater than ± 1.0V 240 - 610 Kc

Comments: AS PER PRINT # SM-B-416421 (2.1.3.1)

A 6000

A6300A 51

A6400A 70

@ +85°C

ARACTOR SENSITIVITY

" B " Band

EQ. SHIFT OLTAGE	LIMITS (KC)		FREQUENCY SHIFT SENSITIVITY 53.000 MHz		63.910 MHz		75.910 MHz	
	(Min)	(Max)	(-)	(+)	(-)	(+)	(-)	(+
.2 v			61	62	75	77	94	96
.4 v			60	64	73	78	92	101
.6 v			58	65	71	81	91	102
.8 v	**		56	67	70	83	87	103
1.0 v	***		55	69	68	84	85	107
1.2 v			54	71	67	88	84	110
1.4 v			53	73	65	90	82	114
1.6 v			52	76	64	94	81	118
1.8 v			51	78	62	95	79	119
2.0 v			50	80	61	99	78	125

These limits apply over a (+) or (-) 500 Kc shift range

** Incr Sens for Voltages less than ± 1.0V 255 - 610 Kc

*** Incr Sens for Voltages equal to and greater than ± 1.0V 240 - 610 Kc

Comments: AS PER PRINT # SM-B-416421 (2.1.3.1)

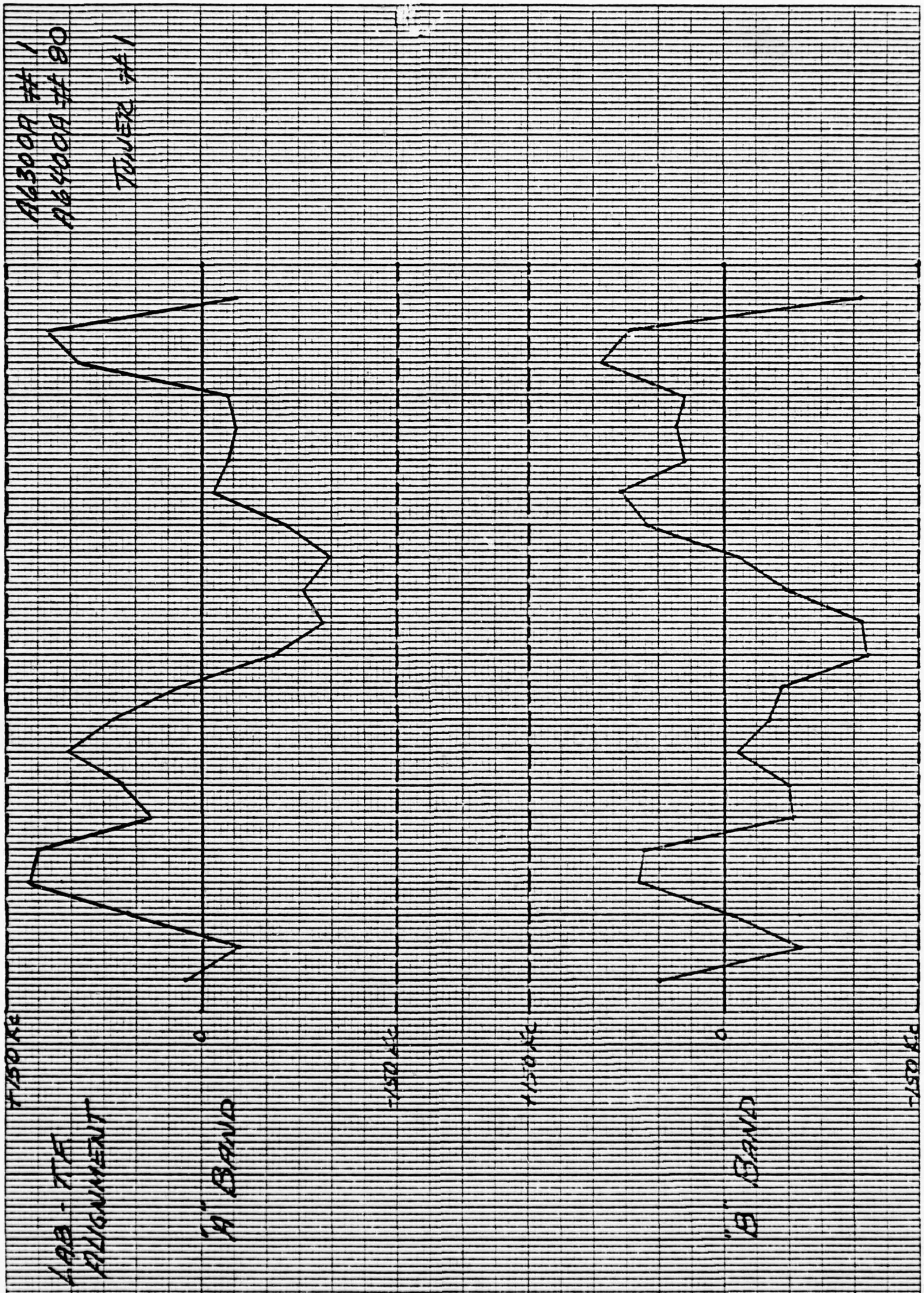
TRACKING

A6300A - MODULES #1, 3, 7, 8, 9, 10, & 19

MODULES TESTED WITH A6400A # 80.
TRACKING CURVES & SUPPORTIVE DATA ONLY.

ALIGNED ON LAB T.F. #1

4


LAB - TF
ALIGNMENT
"A" BAND
"B" BAND
+150 Kc
0
-150 Kc
+150 Kc
0
-150 Kc
A6300A # 1
A6400A # 90
TOWER # 1

A6300A #1

A6400A #80

A6300A

"B" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
53.000	53.050 Mc		
54.091	54.033 "		
55.182	55.174 "		
56.273	56.338 "		
57.364	57.426 "		
58.455	58.403 "		
59.545	59.495 "		
60.636	60.626 "		
61.727	61.693 "		
62.818	62.775 "		
63.909	63.798 "		
65.000	64.893 "		
66.091	66.042 "		
67.182	67.171 "		
68.273	68.343 "		
69.364	69.442 "		
70.455	70.485 "		
71.545	71.583 "		
72.636	72.668 "		
73.727	73.820 "		
74.818	74.891 "		
75.909	75.804 "		

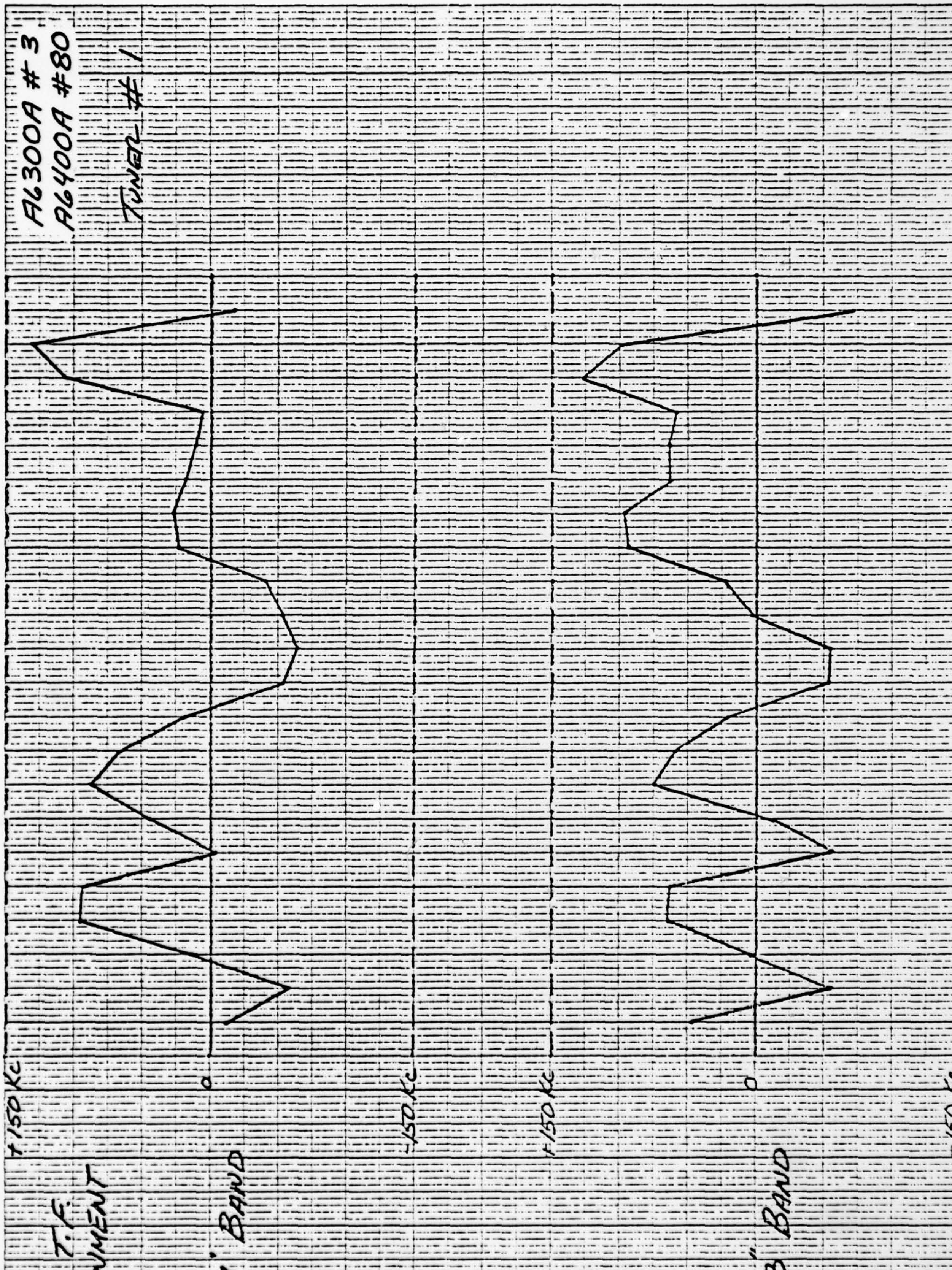
A6300A #1

A6400A #80

A6300A

"A" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
30.000	30.013 Mc		
31.091	31.064 "		
32.182	32.239 "		
33.273	33.404 "		
34.364	34.490 "		
35.455	35.495 "		
36.545	36.606 "		
37.636	37.737 "		
38.727	38.793 "		
39.818	37.835 "		
40.909	40.854 "		
42.000	41.908 "		
43.091	43.014 "		
44.182	44.086 "		
45.273	45.208 "		
46.364	46.355 "		
47.455	47.435 "		
48.545	48.519 "		
49.636	49.617 "		
50.727	50.821 "		
51.818	51.936 "		
52.909	52.883 "		


LAB-T.F. ALIGNMENT
A6300A #3
A6400A #80
TUNER #1
"A" BAND
+150 Kc
0
-150 Kc
"B" BAND
+150 Kc
0
-150 Kc

#A6300A #3

#A6400A #80

A6300A

"A" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
30.000	29.989 Mc		
31.091	31.034 "		
32.182	32.197 "		
33.273	33.368 "		
34.364	34.457 "		
35.455	35.454 "		
36.545	36.590 "		
37.636	37.722 "		
38.727	38.794 "		
39.818	39.836 "		
40.909	40.857 "		
42.000	41.937 "		
43.091	43.038 "		
44.182	44.142 "		
45.273	45.297 "		
46.364	46.391 "		
47.455	47.474 "		
48.545	48.556 "		
49.636	49.642 "		
50.727	50.838 "		
51.818	51.947 "		
52.909	52.892 "		

TRACKING DATA ONLY - LAB TEST FIXTURE

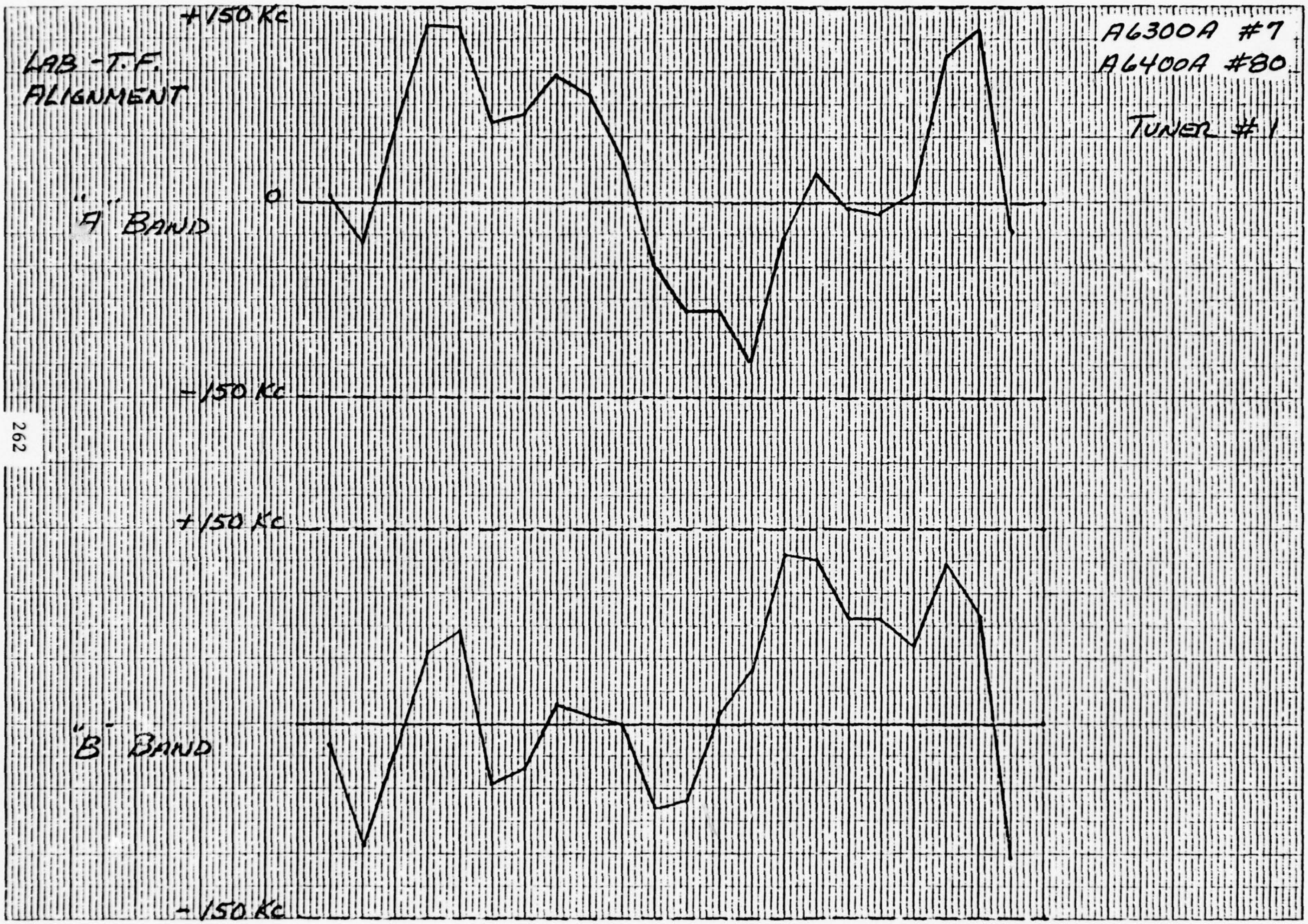
#A6300A #3
#A6400A #80

A6300A

"B" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
53.000	53.046 Mc		
54.091	54.038 "		
55.182	55.186 "		
56.273	56.337 "		
57.364	57.428 "		
58.455	58.399 "		
59.545	59.532 "		
60.636	60.711 "		
61.727	61.785 "		
62.818	62.840 "		
63.909	63.855 "		
65.000	64.945 "		
66.091	66.093 "		
67.182	67.205 "		
68.273	68.367 "		
69.364	69.460 "		
70.455	70.579 "		
71.545	71.608 "		
72.636	72.695 "		
73.727	73.853 "		
74.818	74.918 "		
75.909	75.838 "		

TRACKING DATA ONLY - LAB TEST FIXTURE


LAB - T.F. ALIGNMENT
A6300A #7
A6400A #80
TUNER #1
+150 Kc
0
"A" BAND
-150 Kc
+150 Kc
"B" BAND
-150 Kc

#A6300A #7

#A6400A #80

A6300A

"A" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
30.000	30.005 Mc		
31.091	31.061 "		
32.182	32.241 "		
33.273	33.408 "		
34.364	34.499 "		
35.455	35.518 "		
36.545	36.614 "		
37.636	37.734 "		
38.727	38.810 "		
39.818	39.851 "		
40.909	40.861 "		
42.000	41.917 "		
43.091	43.007 "		
44.182	44.062 "		
45.273	45.246 "		
46.364	46.385 "		
47.455	47.451 "		
48.545	48.538 "		
49.636	49.642 "		
50.727	50.839 "		
51.818	51.950 "		
52.909	52.888 "		

TRACKING DATA ONLY - LAB-TEST FIXTURE

#A6300A #7
#A6400A #8

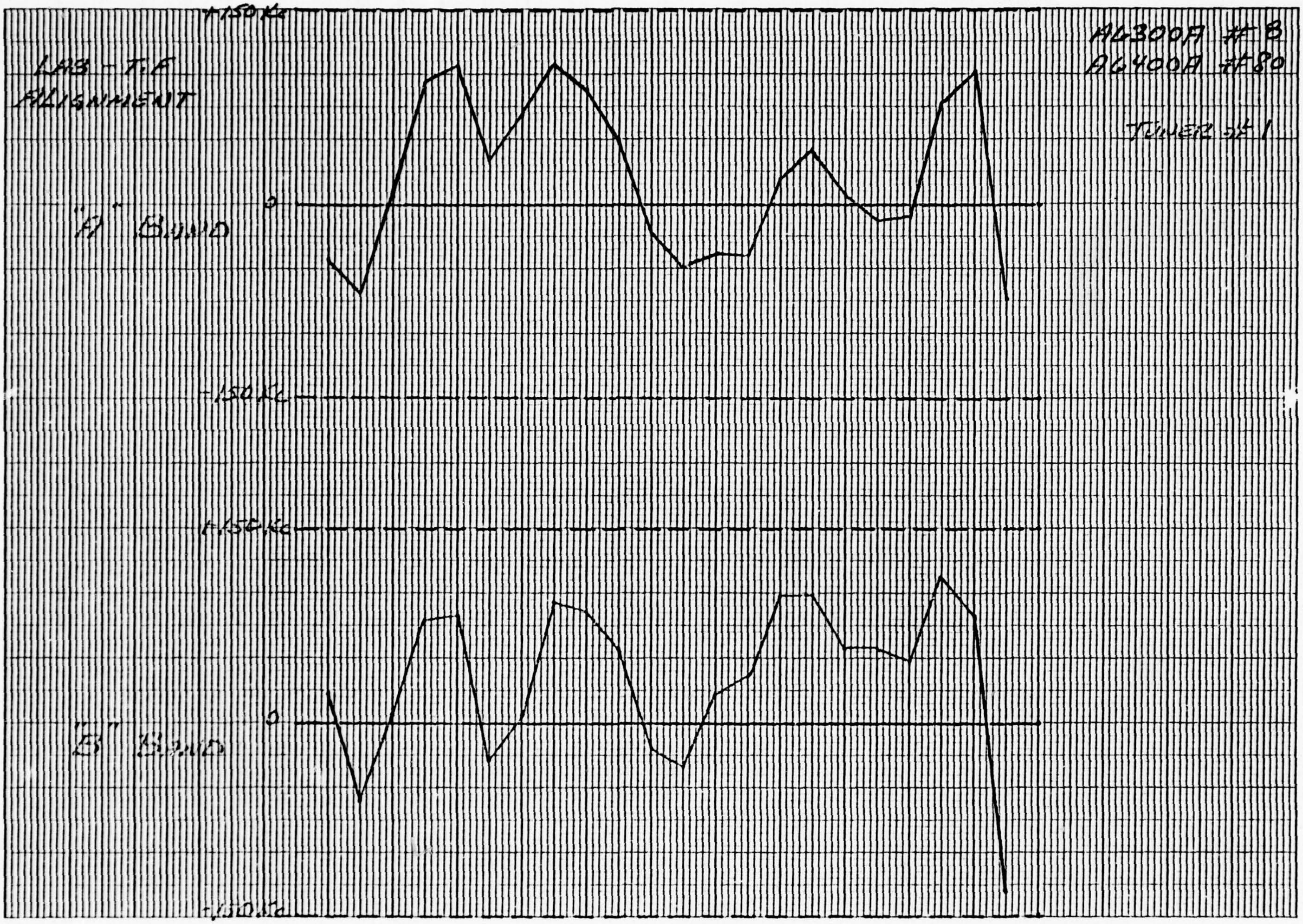
A6300A

"B" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
53.000	52.987 Mc		
54.091	53.998 "		
55.182	55.160 "		
56.273	56.328 "		
57.364	57.435 "		
58.455	58.410 "		
59.545	59.510 "		
60.636	60.651 "		
61.727	61.736 "		
62.818	62.818 "		
63.909	63.844 "		
65.000	64.941 "		
66.091	66.099 "		
67.182	67.223 "		
68.273	68.403 "		
69.364	69.491 "		
70.455	70.536 "		
71.545	71.626 "		
72.636	72.697 "		
73.727	73.849 "		
74.818	74.899 "		
75.909	75.805 "		

TRACKING DATA ONLY - LAB-TEST FIXTURE

K+E 10 X 10 TO ½ INCH 7 X 10 INCHES KEUFFEL & ESSER CO. MADE IN U.S.A. 46 1323



A6300A # 8

A6400A # 80

A6300A

"A" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
30.000	29.958 Mc		
31.091	31.019 "		
32.182	32.187 "		
33.273	33.367 "		
34.364	34.470 "		
35.455	35.490 "		
36.545	36.613 "		
37.636	37.745 "		
38.727	38.815 "		
39.818	39.864 "		
40.909	40.885 "		
42.000	41.954 "		
43.091	43.052 "		
44.182	44.142 "		
45.273	45.293 "		
46.364	46.406 "		
47.455	47.462 "		
48.545	48.533 "		
49.636	49.626 "		
50.727	50.805 "		
51.818	51.920 "		
52.909	52.825 "		

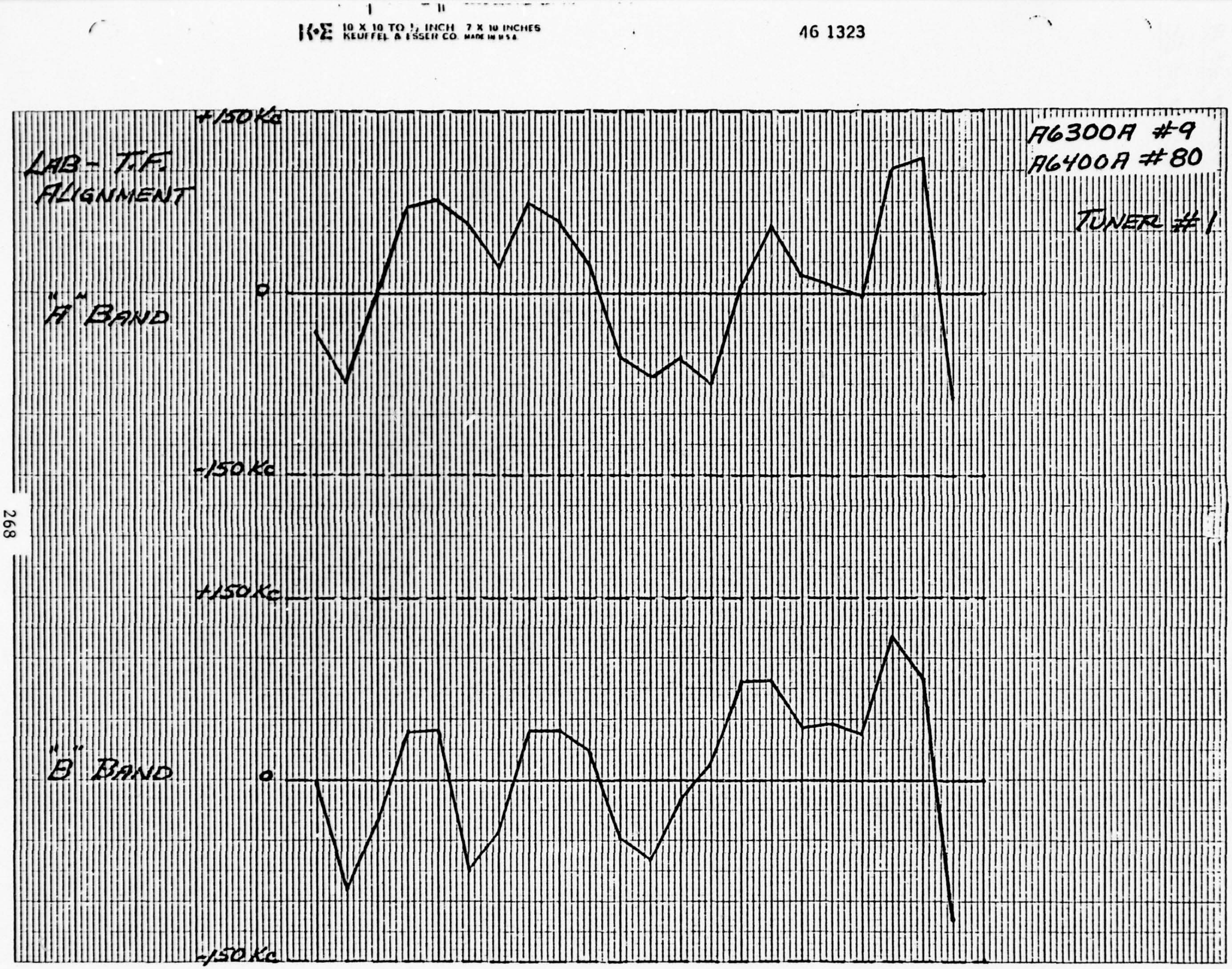
A6300A # 8

A6400A # 80

A6300A

"B" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC
53.000	53.023 Mc
54.091	54.032 "
55.182	55.193 "
56.273	56.353 "
57.364	57.447 "
58.455	58.427 "
59.545	59.551 "
60.636	60.730 "
61.727	61.814 "
62.818	62.877 "
63.909	63.889 "
65.000	64.967 "
66.091	66.115 "
67.182	67.219 "
68.273	68.372 "
69.364	69.463 "
70.455	70.511 "
71.545	71.603 "
72.636	72.683 "
73.727	73.841 "
74.818	74.902 "
75.909	75.781 "


K+E 10 X 10 TO 1/2 INCH 7 X 10 INCHES
KEUFFEL & ESSER CO. MADE IN U.S.A.
46 1323
LAB - T.F. ALIGNMENT
A6300A #9
A6400A #80
TUNER #1
"A" BAND
"B" BAND
+150 Kc
0
-150 Kc
+150 Kc
0
-150 Kc

A6300A #9

A6400A #80

A6300A

"A" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
30.000	29.969 Mc		
31.091	31.017 "		
32.182	32.181 "		
33.273	33.344 "		
34.364	34.440 "		
35.455	35.471 "		
36.545	36.566 "		
37.636	37.710 "		
38.727	38.785 "		
39.818	39.841 "		
40.909	40.858 "		
42.000	41.932 "		
43.091	43.037 "		
44.182	44.107 "		
45.273	45.278 "		
46.364	46.418 "		
47.455	47.470 "		
48.545	48.550 "		
49.636	49.632 "		
50.727	50.829 "		
51.818	51.928 "		
52.909	52.823 "		

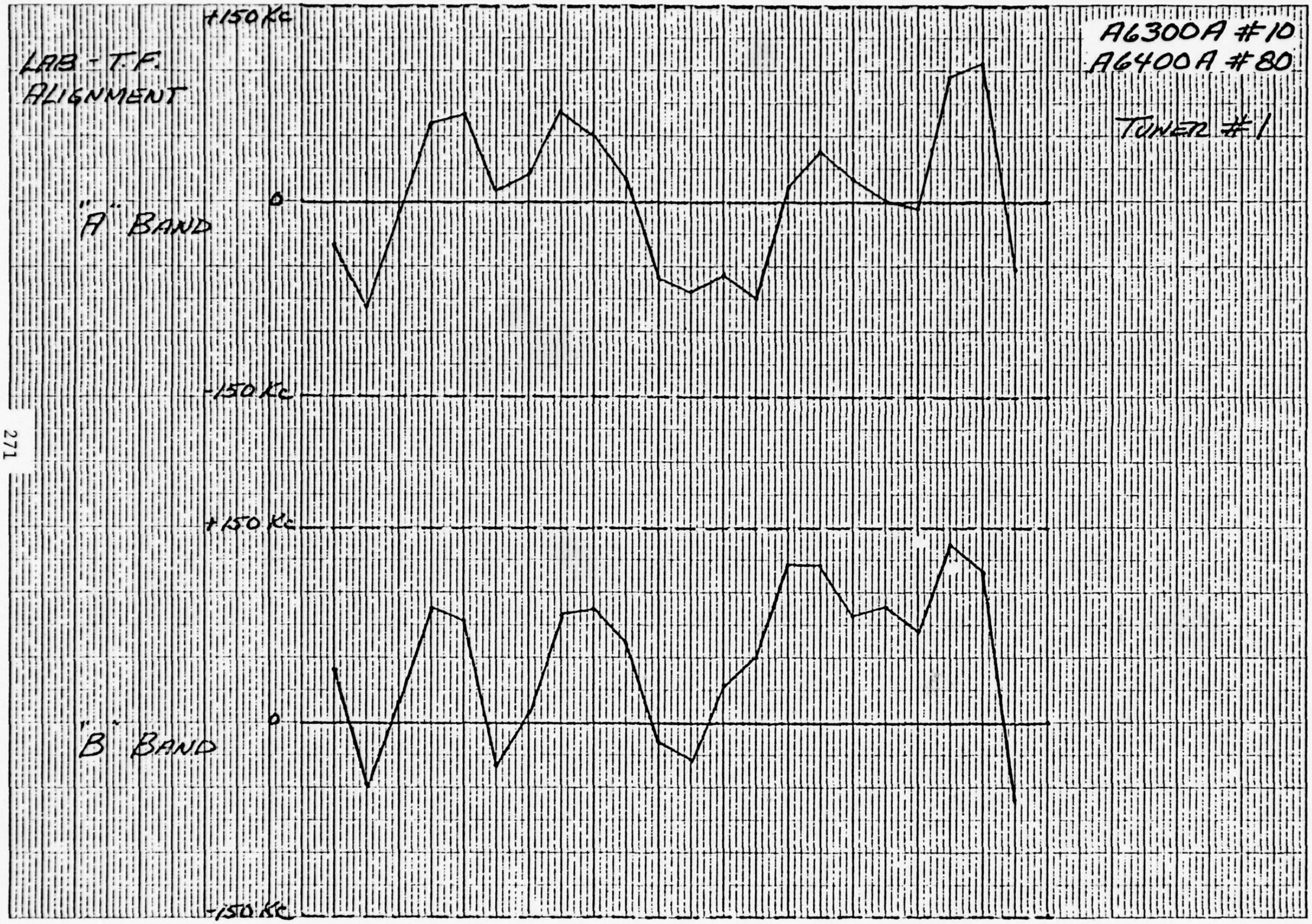
A6300A #9

A6400A #80

A6300A

"B" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
53.000	52.999 Mc		
54.091	54.001 "		
55.182	55.149 "		
56.273	56.312 "		
57.364	57.404 "		
58.455	58.381 "		
59.545	59.501 "		
60.636	60.677 "		
61.727	61.768 "		
62.818	62.840 "		
63.909	63.861 "		
65.000	64.936 "		
66.091	66.075 "		
67.182	67.195 "		
68.273	68.354 "		
69.364	69.446 "		
70.455	70.499 "		
71.545	71.591 "		
72.636	72.676 "		
73.727	73.845 "		
74.818	74.902 "		
75.909	75.795 "		


LAB - T.F.
ALIGNMENT
"A" BAND
"B" BAND
+150 Kc
0
-150 Kc
+150 Kc
0
-150 Kc
A6300A #10
A6400A #80
TUNER #1

A6300A #10

A6400A #80

A6300A

"A" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
30.000	29.968 Mc		
31.091	31.011 "		
32.182	32.175 "		
33.273	33.333 "		
34.364	34.430 "		
35.455	35.465 "		
36.545	36.565 "		
37.636	37.705 "		
38.727	38.779 "		
39.818	39.834 "		
40.909	40.851 "		
42.000	41.932 "		
43.091	43.035 "		
44.182	44.108 "		
45.273	45.284 "		
46.364	46.402 "		
47.455	47.472 "		
48.545	48.546 "		
49.636	49.631 "		
50.727	50.822 "		
51.818	51.924 "		
52.909	52.858 "		

A6300A #10

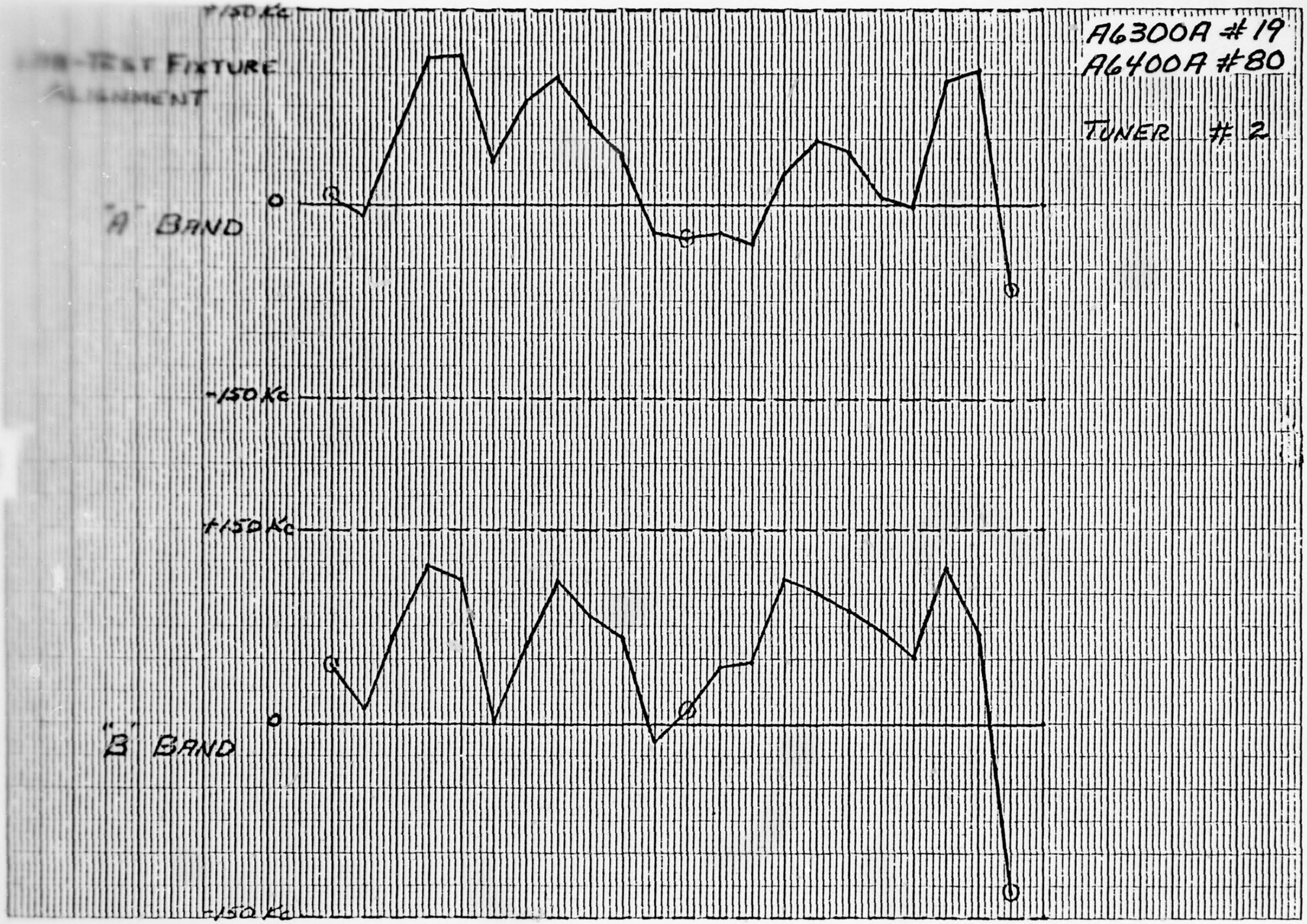
A6400A #80

A6300A

"A" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC
30.000	53.041 Mc
31.091	54.045 "
32.182	55.198 "
33.273	56.362 "
34.364	57.443 "
35.455	58.423 "
36.545	59.554 "
37.636	60.719 "
38.727	61.815 "
39.818	62.882 "
40.909	63.896 "
42.000	64.982 "
43.091	66.121 "
44.182	67.232 "
45.273	68.396 "
46.364	69.487 "
47.455	70.538 "
48.545	71.634 "
49.636	72.708 "
50.727	73.867 "
51.818	74.934 "
52.909	75.850 "

K+E 10 X 10 TO ½ INCH 7 X 10 INCHES KEUFFEL & ESSER CO. MADE IN U.S.A. 46 1323



A6300A #19

A6400A #80

A6300A

"A" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
30.000	30.007 Mc		
31.091	31.082 "		
32.182	32.236 "		
33.273	33.385 "		
34.364	34.478 "		
35.455	35.489 "		
36.545	36.622 "		
37.636	37.723 "		
38.727	38.789 "		
39.818	39.856 "		
40.909	40.887 "		
42.000	41.973 "		
43.091	43.067 "		
44.182	44.150 "		
45.273	45.296 "		
46.364	46.412 "		
47.455	47.492 "		
48.545	48.555 "		
49.636	49.632 "		
50.727	50.821 "		
51.818	51.921 "		
52.909	52.844 "		

A6400A #

A6300A

"B" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
53.000	53.045 Mc		
54.091	54.103		
55.182	55.255		
56.273	55.395		
57.364	57.475		
58.455	58.456		
59.545	59.605		
60.636	60.746		
61.727	61.811		
62.818	62.884		
63.909	63.898		
65.000	65.010		
66.091	66.135		
67.182	67.230		
68.273	68.385		
69.364	69.466		
70.455	70.544		
71.545	71.617		
72.636	72.687		
73.727	73.847		
74.818	74.890		
75.909	75.782		

TRACKING

A6300A - MODULES # 2, 6, & 12

MODULES TESTED WITH A6400A # 84.
TRACKING CURVES & SUPPORTIVE DATA ONLY.

A6300A - MODULES # 11, 17, & 18

MODULES TESTED WITH A6400A # 83.

A6300A - MODULES # 16 & 20

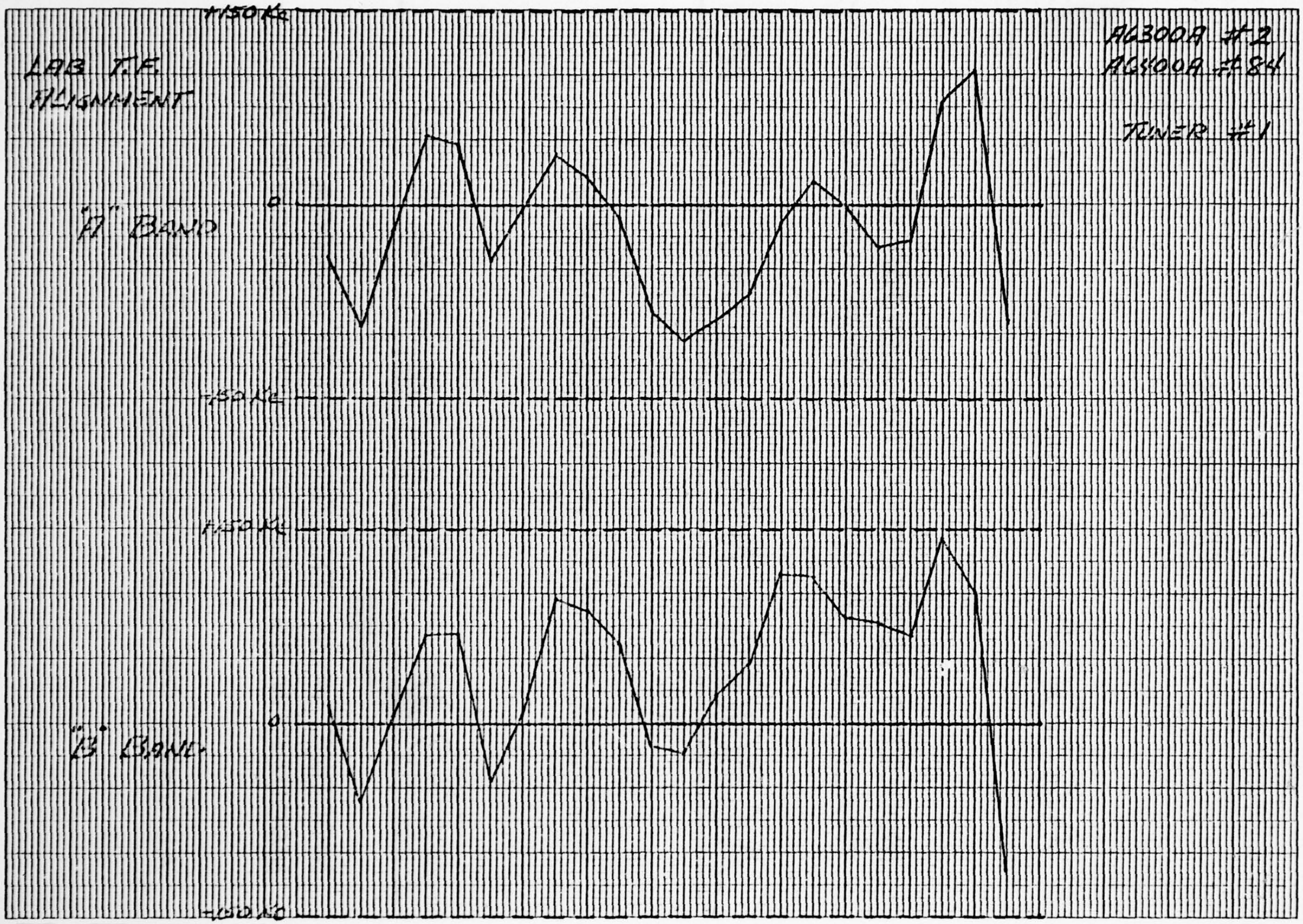
MODULE # 16 TESTED WITH A6400A # 82.
MODULE # 20 TESTED WITH A6400A # 79

ALIGNED ON LAB TEST FIXTURE. # 1

5

K+E 10 X 10 TO 1/2 INCH 7 X 10 INCHES
KEUFFEL & ESSER CO. MADE IN U.S.A.

46 1323



A6300A #2
A6400A #84

A6300A

"A" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
30.000	29.962 Mc		
31.091	31.000 "		
32.182	32.166 "		
33.273	33.326 "		
34.364	34.411 "		
35.455	35.413 "		
36.545	36.542 "		
37.636	37.674 "		
38.727	38.750 "		
39.818	39.807 "		
40.909	40.826 "		
42.000	41.896 "		
43.091	43.004 "		
44.182	44.114 "		
45.273	45.259 "		
46.364	46.383 "		
47.455	47.454 "		
48.545	48.574 "		
49.636	49.609 "		
50.727	50.809 "		
51.818	51.922 "		
52.909	52.822 "		

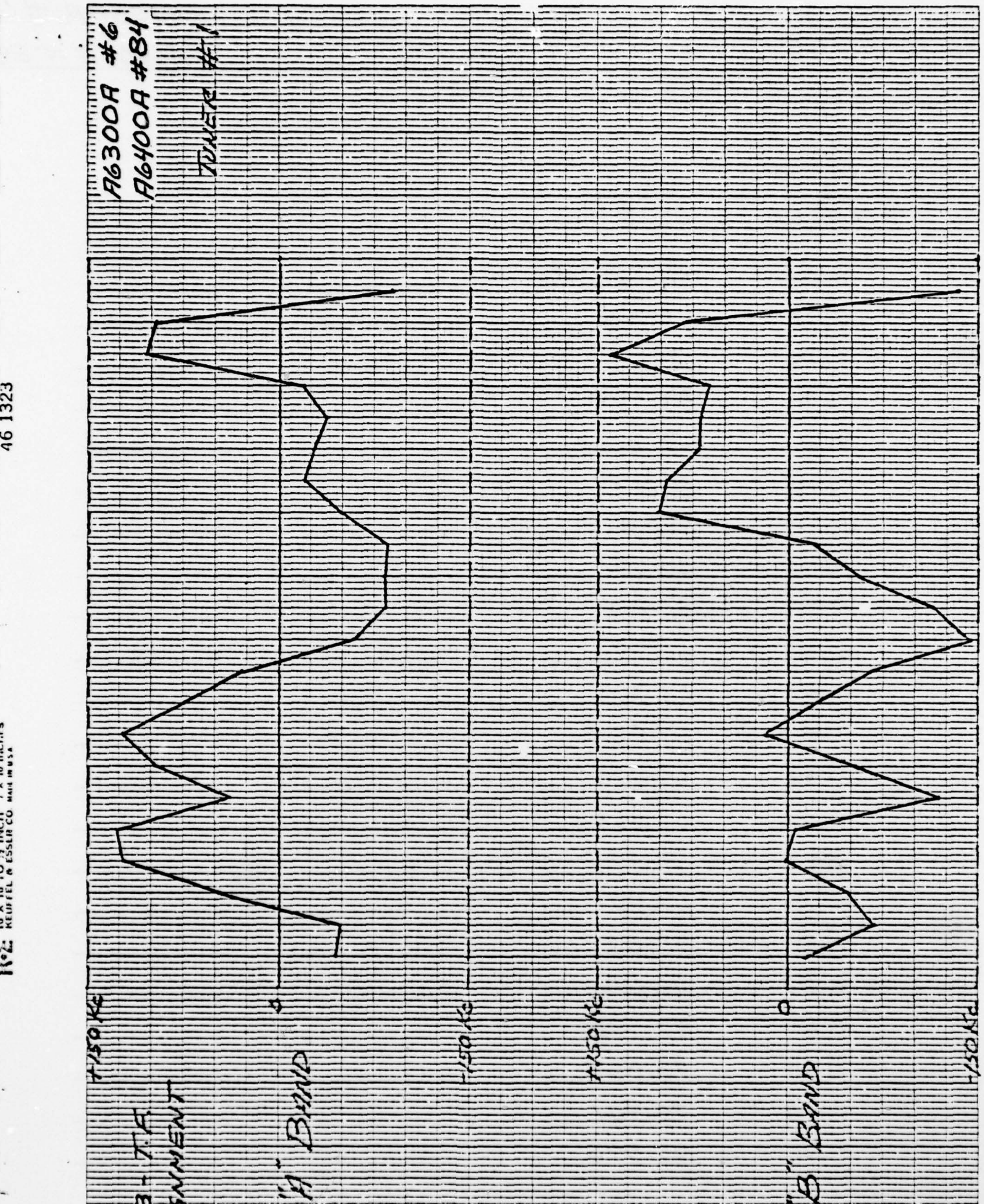
A6300A #2

A6400A #34

A6300A

"B" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
53.000	53.015 Mc		
54.091	54.033 "		
55.182	55.188 "		
56.273	56.342 "		
57.364	57.431 "		
58.455	58.413 "		
59.545	59.552 "		
60.636	60.732 "		
61.727	61.814 "		
62.818	62.880 "		
63.909	63.892 "		
65.000	64.979 "		
66.091	66.114 "		
67.182	67.229 "		
68.273	68.389 "		
69.364	69.479 "		
70.455	70.538 "		
71.545	71.624 "		
72.636	72.705 "		
73.727	73.871 "		
74.818	74.920 "		
75.909	75.795 "		


46 1323
A6300A #6
A6400A #84
TUNER #1
LAB-T.A. ALIGNMENT
"A" BAND
"B" BAND
+150 Kc
0
-150 Kc
+150 Kc
0
-150 Kc

A6300A #6

A6400A #84

A6300A

"B" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
53.000	52.988 Mc		
54.091	53.997		
55.182	55.133		
56.273	56.275		
57.364	57.358		
58.455	58.337		
59.545	59.492		
60.636	60.654		
61.727	61.702		
62.818	62.754		
63.909	63.766		
65.000	64.885		
66.091	66.036		
67.182	67.163		
68.273	68.375		
69.364	69.461		
70.455	70.527		
71.545	71.616		
72.636	72.700		
73.727	73.868		
74.818	74.901		
75.909	75.776		

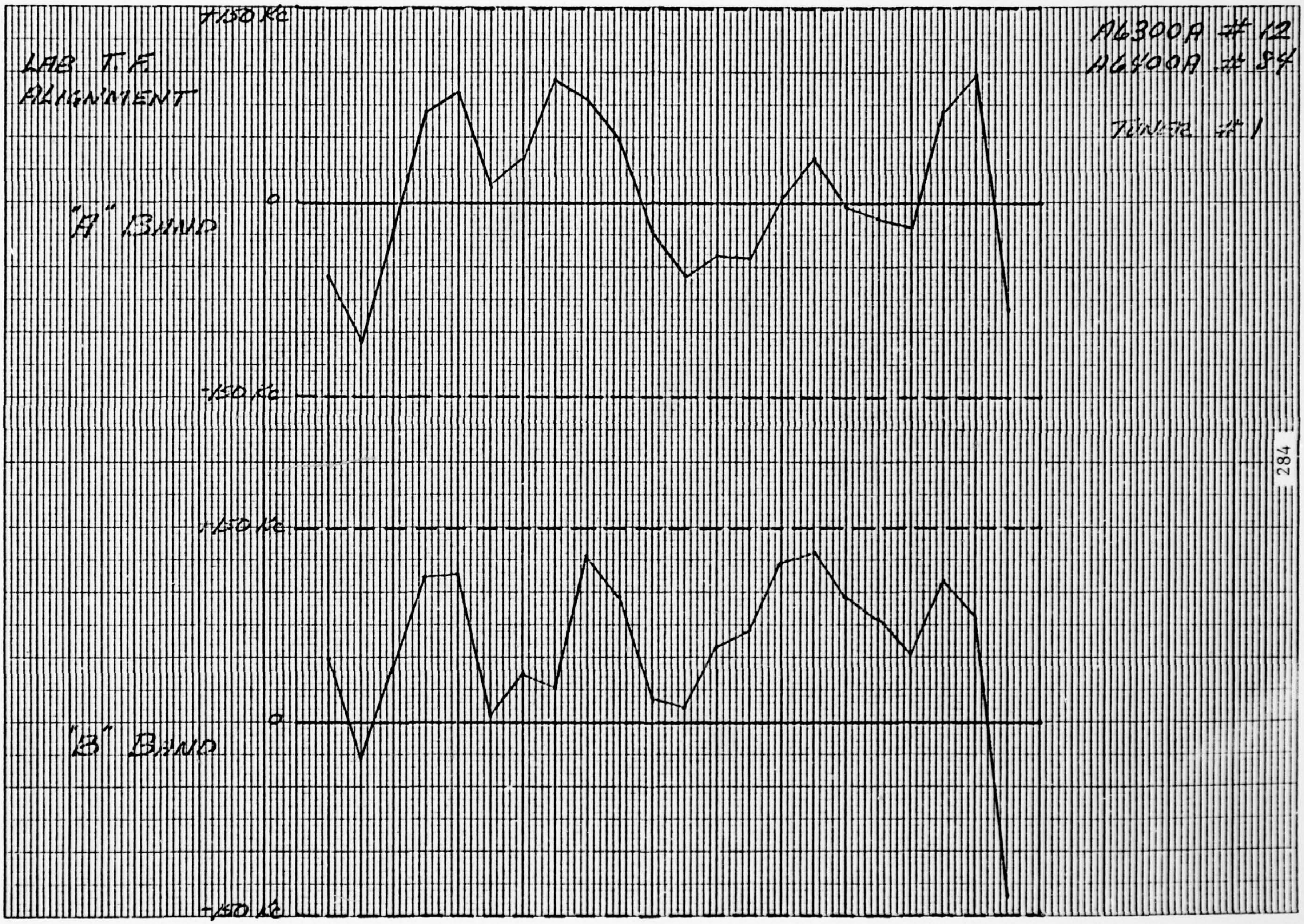
A6300A #6

A6400A #84

A6300A

"A" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
30.000	29.955 Mc		
31.091	31.045 "		
32.182	32.229 "		
33.273	33.395 "		
34.364	34.495 "		
35.455	35.494 "		
36.545	36.643 "		
37.636	37.758 "		
38.727	38.802 "		
39.818	39.845 "		
40.909	40.850 "		
42.000	41.916 "		
43.091	43.009 "		
44.182	44.097 "		
45.273	45.224 "		
46.364	46.344 "		
47.455	47.429 "		
48.545	48.508 "		
49.636	49.616 "		
50.727	50.832 "		
51.818	51.914 "		
52.909	52.819 "		



LAB T.F.
ALIGNMENT
"A" BAND
"B" BAND
+150 Kc
0
-150 Kc
+150 Kc
0
-150 Kc
A6300A # 12
A6400A # 84
TUNER # 1

A6300A #12

A6400A #84

A6300A

"A" Band

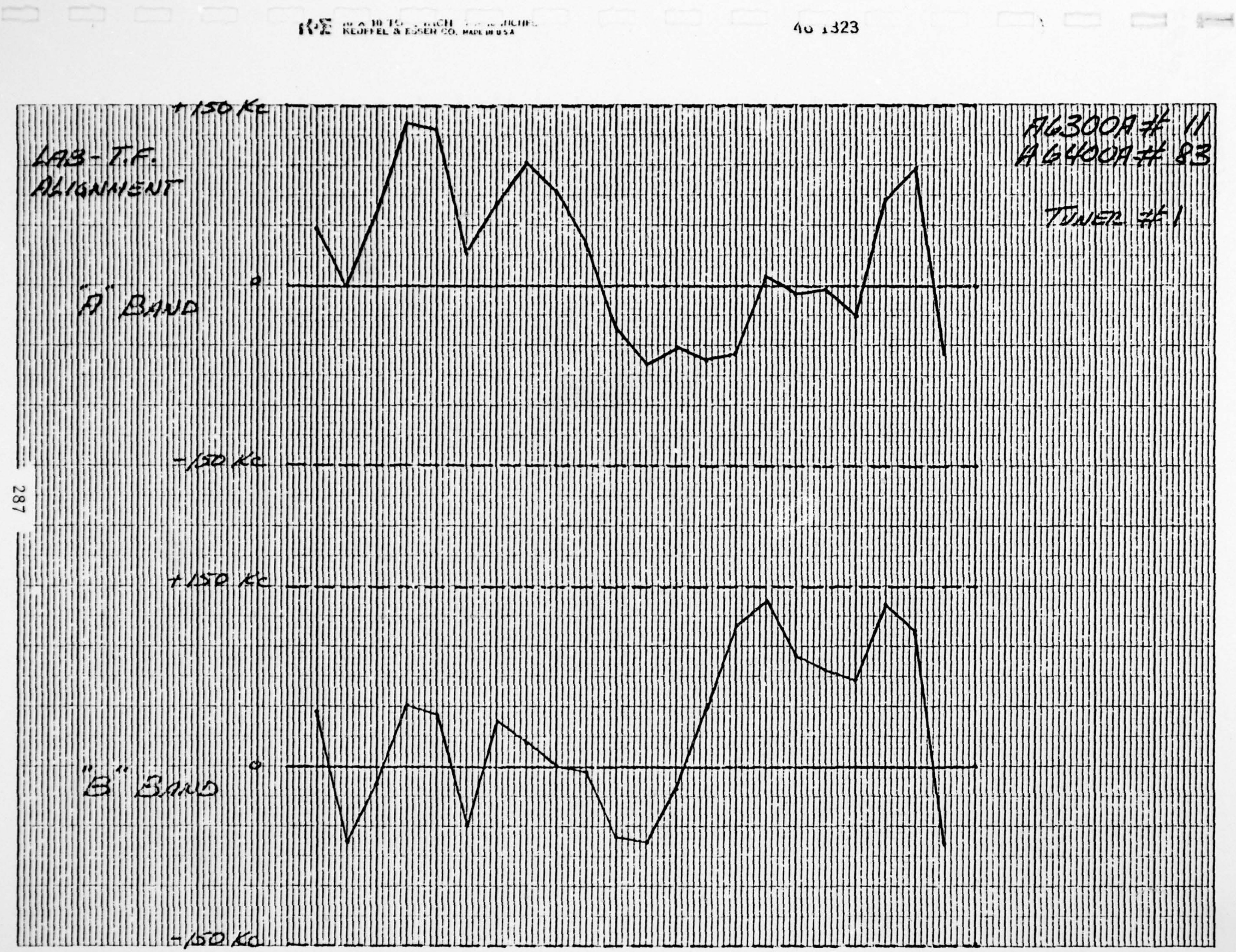
Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
30.000	29.943 Mc		
31.091	30.985 "		
32.182	32.161 "		
33.273	33.343 "		
34.364	34.448 "		
35.455	35.469 "		
36.545	36.579 "		
37.636	37.731 "		
38.727	38.807 "		
39.818	39.866 "		
40.909	40.886 "		
42.000	41.944 "		
43.091	43.051 "		
44.182	44.139 "		
45.273	45.282 "		
46.364	46.398 "		
47.455	47.452 "		
48.545	48.534 "		
49.636	49.619 "		
50.727	50.798 "		
51.818	51.917 "		
52.909	52.827 "		

A6300A #12.
A6400A #84

A6300A

"B" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
53.000	53.049 Mc		
54.091	54.065 "		
55.182	55.225 "		
56.273	56.385 "		
57.364	57.478 "		
58.455	58.461 "		
59.545	59.583 "		
60.636	60.763 "		
61.727	61.854 "		
62.818	62.915 "		
63.909	63.929 "		
65.000	65.013 "		
66.091	66.149 "		
67.182	67.253 "		
68.273	68.396 "		
69.364	69.494 "		
70.455	70.547 "		
71.545	71.625 "		
72.636	72.691 "		
73.727	73.836 "		
74.818	74.901 "		
75.909	75.776 "		


K&E 10 X 10 TO THE INCH
KEUFFEL & ESSER CO. MADE IN U.S.A.
46 1323
LAB-T.F.
ALIGNMENT
"A" BAND
"B" BAND
+150 Kc
0
-150 Kc
+150 Kc
0
-150 Kc
A6300A # 11
A6400A # 83
TUNER # 1

AD-A056 084 E-SYSTEMS INC HUNTINGTON IN MEMCOR DIV F/G 17/2.1
AN/VRC-12, 43-49 SERIES RADIO SET SILICONIZATION PRODUCT IMPROV--ETC(U)
MAY 78 K P YELTON DAAB07-76-C-0135
UNCLASSIFIED CORADCOM-76-C-0135-F NL

4 OF 5
ADA
056084

A6300A #1
A6400A #83

A6300A

"A" Band

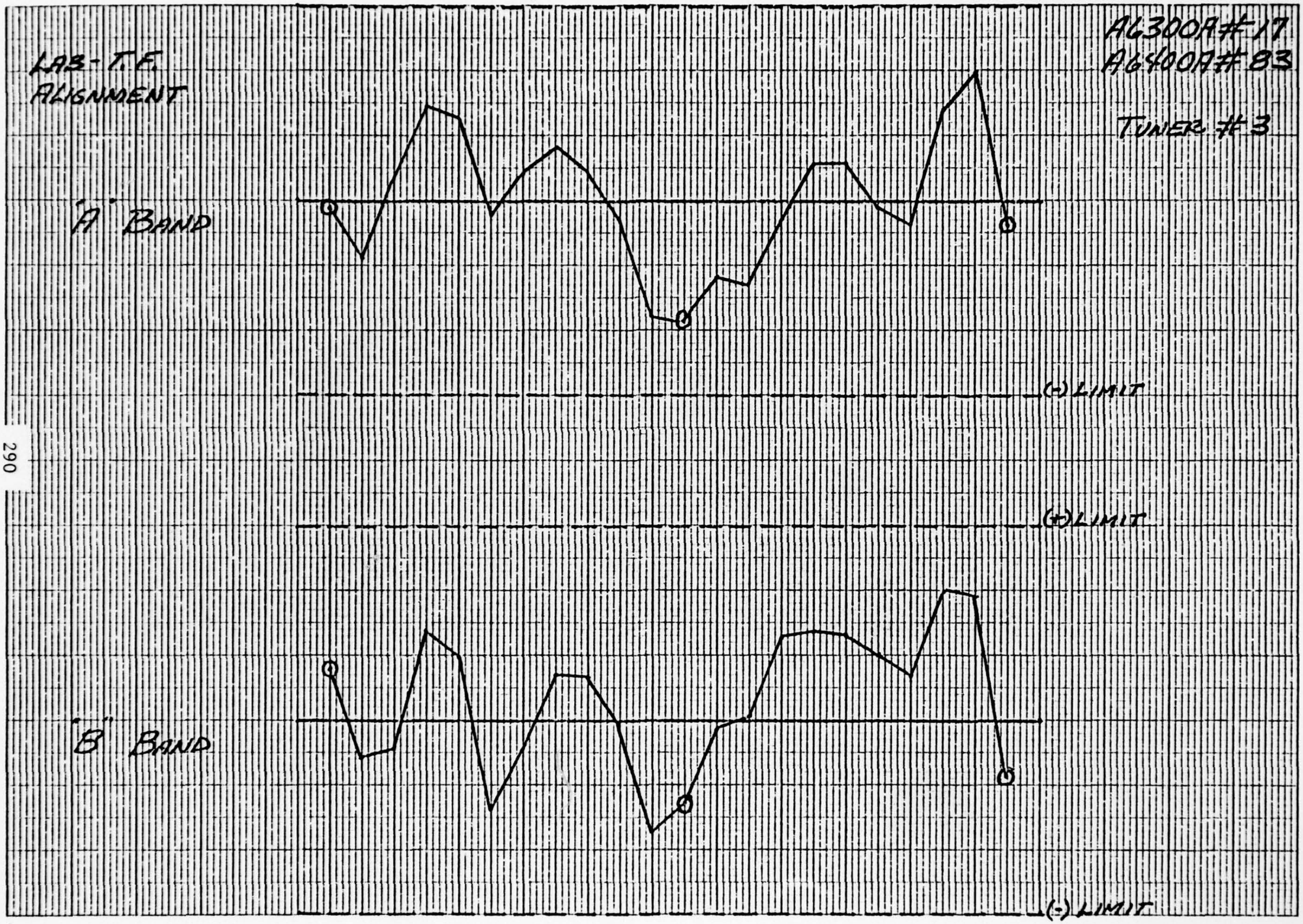
Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
30.000	30.048 Mc		
31.091	31.043 "		
32.182	32.252 "		
33.273	33.409 "		
34.364	34.494 "		
35.455	35.482 "		
36.545	36.614 "		
37.636	37.737 "		
38.727	38.804 "		
39.818	39.853 "		
40.909	40.874 "		
42.000	41.935 "		
43.091	43.040 "		
44.182	44.120 "		
45.273	45.217 "		
46.364	46.371 "		
47.455	47.449 "		
48.545	48.543 "		
49.636	49.611 "		
50.727	50.799 "		
51.818	51.915 "		
52.909	52.853 "		

A6300A #11
A6400A #83

A6300A

"B" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
53.000	53.046 Mc		
54.091	54.029 "		
55.182	55.167 "		
56.273	56.324 "		
57.364	57.408 "		
58.455	58.406 "		
59.545	59.507 "		
60.636	60.656 "		
61.727	61.728 "		
62.818	62.814 "		
63.909	63.851 "		
65.000	64.937 "		
66.091	66.073 "		
67.182	67.230 "		
68.273	68.391 "		
69.364	69.503 "		
70.455	70.548 "		
71.545	71.627 "		
72.636	72.709 "		
73.727	73.862 "		
74.818	74.933 "		
75.909	75.847 "		


LAB-T.F.
ALIGNMENT
AG300A #17
AG400A #83
TUNER #3
"A" BAND
(-) LIMIT
(+) LIMIT
"B" BAND
(-) LIMIT

A6300A #17
A6400A #83
TUNER #3
@ +25° C

A6300A

"A" Band

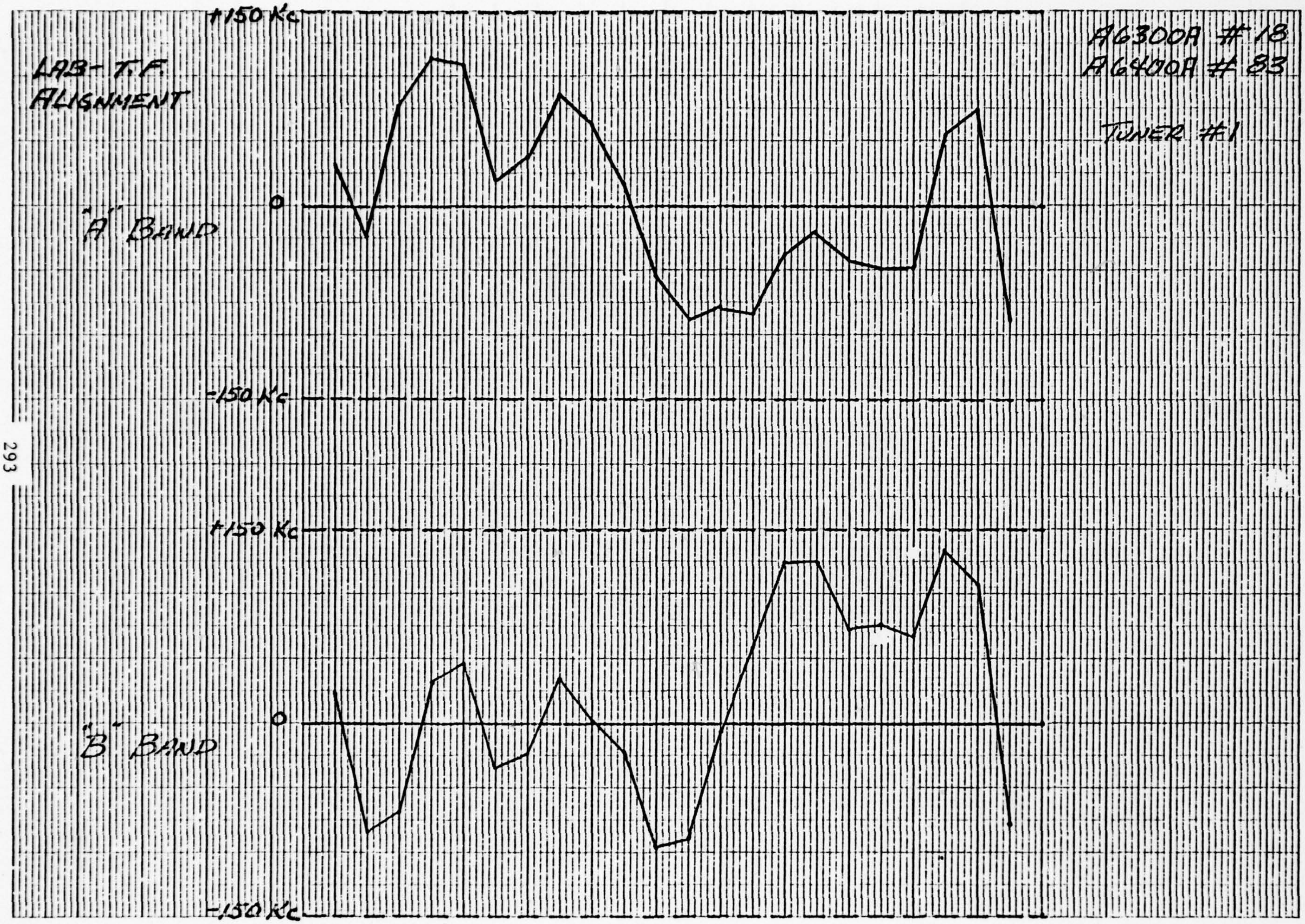
Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
30.000	29.995 Mc		
31.091	31.048 "		
32.182	32.198 "		
33.273	33.346 "		
34.364	34.427 "		
35.455	35.445 "		
36.545	36.565 "		
37.636	37.676 "		
38.727	38.750 "		
39.818	39.805 "		
40.909	40.820 "		
42.000	41.917 "		
43.091	43.032 "		
44.182	44.118 "		
45.273	45.260 "		
46.364	46.391 "		
47.455	47.483 "		
48.545	48.539 "		
49.636	49.619 "		
50.727	50.797 "		
51.818	51.918 "		
52.909	52.890 "		

A6300A #17
A6400A #8

A6300A
"B" Band

TUNER #3
@ +25°C

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
53.000	53.040 Mc		
54.091	54.064 "		
55.182	55.204 "		
56.273	56.343 "		
57.364	57.413 "		
58.455	58.386 "		
59.545	59.522 "		
60.636	60.671 "		
61.727	61.760 "		
62.818	62.814 "		
63.909	63.824 "		
65.000	64.936 "		
66.091	66.080 "		
67.182	67.190 "		
68.273	68.336 "		
69.364	69.432 "		
70.455	70.522 "		
71.545	71.595 "		
72.636	72.671 "		
73.727	73.827 "		
74.818	74.915 "		
75.909	75.868 "		


LAB - T.F.
ALIGNMENT
"A" BAND
"B" BAND
+150 Kc
0
-150 Kc
+150 Kc
0
-150 Kc
A6300A # 18
A6400A # 83
TUNER #1

A6300A #1

A6400A #83

A6300A

"A" Band

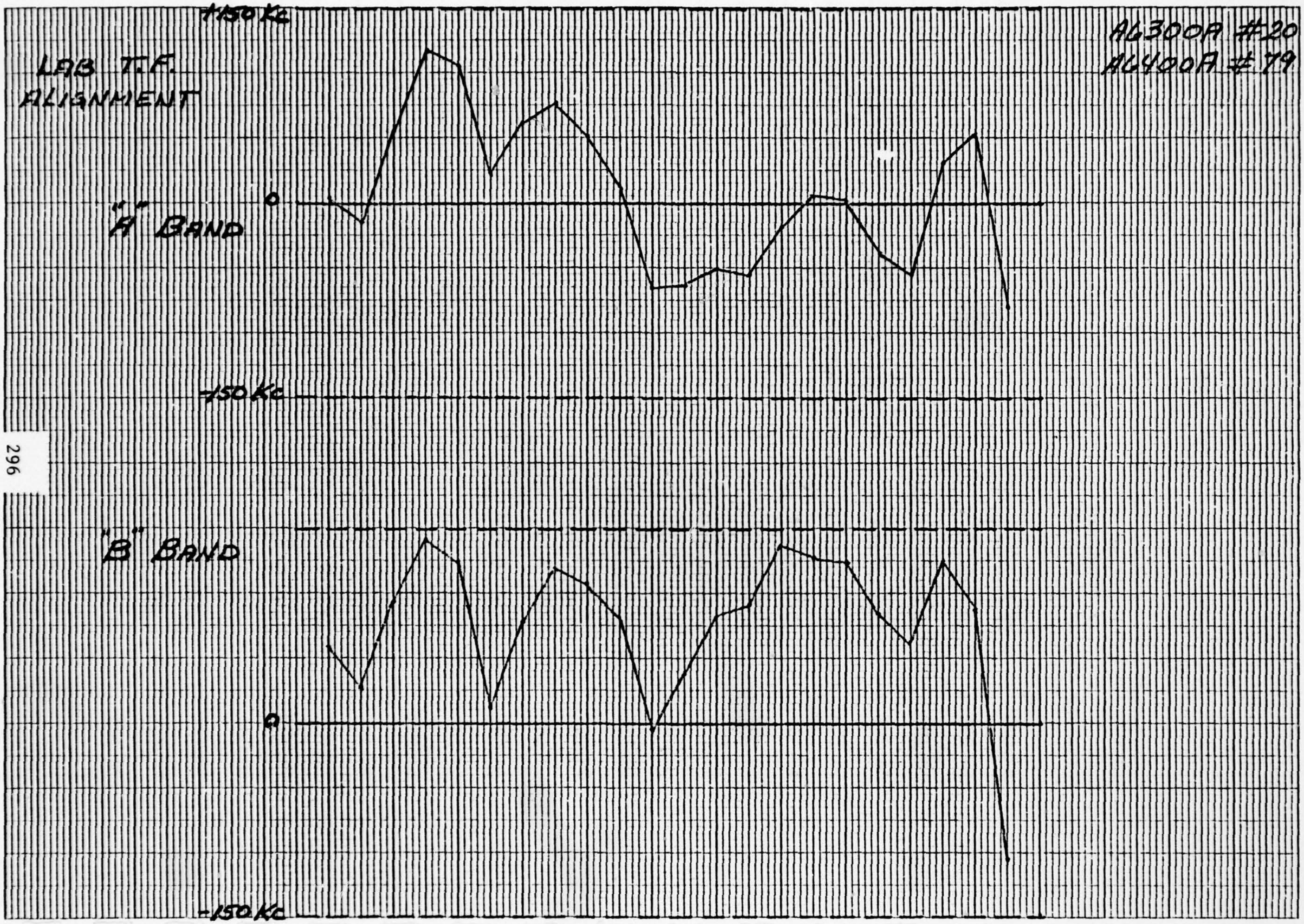
Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
30.000	30.031 Mc		
31.091	31.069 "		
32.182	32.241 "		
33.273	33.388 "		
34.364	34.472 "		
35.455	35.475 "		
36.545	36.582 "		
37.636	37.722 "		
38.727	38.790 "		
39.818	39.835 "		
40.909	40.854 "		
42.000	41.914 "		
43.091	43.013 "		
44.182	44.019 "		
45.273	45.234 "		
46.364	46.344 "		
47.455	47.413 "		
48.545	48.496 "		
49.636	49.590 "		
50.727	50.780 "		
51.818	51.893 "		
52.909	52.822 "		

A6300A #18
A6400A # 83

A6300A

"B" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
53.000	53.023 Mc		
54.091	54.007 "		
55.182	55.114 "		
56.273	56.305 "		
57.364	57.410 "		
58.455	58.421 "		
59.545	59.522 "		
60.636	60.671 "		
61.727	61.729 "		
62.818	62.796 "		
63.909	63.813 "		
65.000	64.911 "		
66.091	66.084 "		
67.182	67.240 "		
68.273	68.398 "		
69.364	69.429 "		
70.455	70.529 "		
71.545	71.621 "		
72.636	72.704 "		
73.727	73.860 "		
74.818	74.926 "		
75.909	75.832 "		


LAB T.F.
ALIGNMENT
AL300A #20
AL400A #79
+150 Kc
0
"A" BAND
-150 Kc
"B" BAND
0
-150 Kc

A6300A #20

A6400A # 79

A6300A

"A" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
30.000	30.005 Mc		
31.091	31.077 "		
32.182	32.238 "		
33.273	33.390 "		
34.364	34.475 "		
35.455	35.477 "		
36.545	36.607 "		
37.636	37.711 "		
38.727	38.779 "		
39.818	39.830 "		
40.909	40.844 "		
42.000	41.936 "		
43.091	43.041 "		
44.182	44.125 "		
45.273	45.256 "		
46.364	46.369 "		
47.455	47.456 "		
48.545	48.506 "		
49.636	49.581 "		
50.727	50.758 "		
51.818	51.870 "		
52.909	52.800 "		

A6300A #23

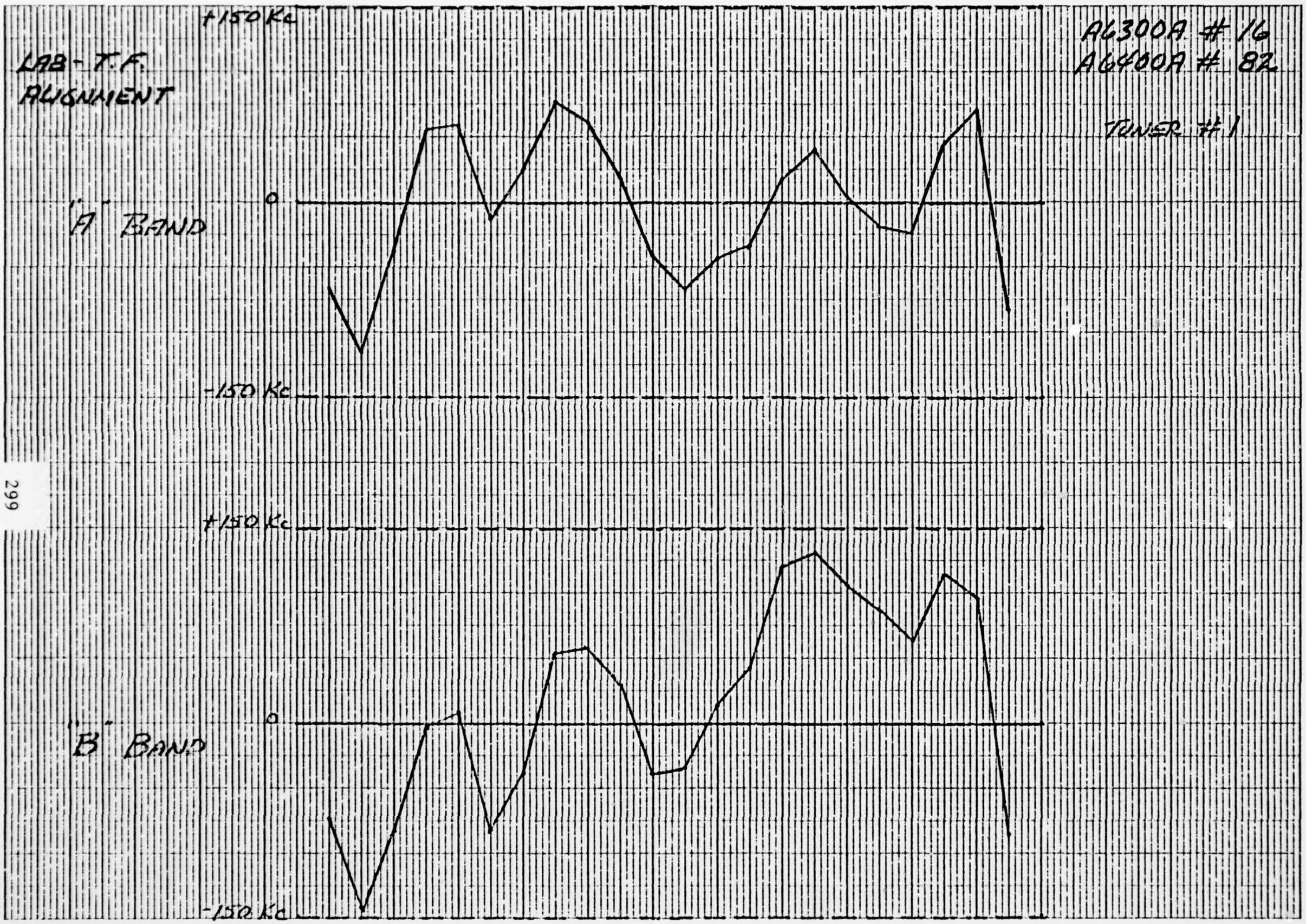
A6400A #74

A6300A

"B" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
53.000	53.058 Mc		
54.091	54.119 "		
55.182	55.276 "		
56.273	56.416 "		
57.364	57.489 "		
58.455	58.468 "		
59.545	59.623 "		
60.636	60.756 "		
61.727	61.835 "		
62.818	62.900 "		
63.909	63.906 "		
65.000	65.037 "		
66.091	66.173 "		
67.182	67.274 "		
68.273	68.410 "		
69.364	69.492 "		
70.455	70.580 "		
71.545	71.630 "		
72.636	72.699 "		
73.727	73.852 "		
74.818	74.905 "		
75.909	75.804 "		

K+E 10 X 10 TO THE INCH · 7 X 10 INCHES KEUFFEL & ESSER CO. MADE IN U.S.A. 46 1323



#A6300A # 16

#A6400A # 82

A6300A

"A" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
30.000	29.934 Mc		
31.091	30.976 "		
32.182	32.146 "		
33.273	33.328 "		
34.364	34.423 "		
35.455	35.443 "		
36.545	36.571 "		
37.636	37.712 "		
38.727	38.788 "		
39.818	39.837 "		
40.909	40.869 "		
42.000	41.944 "		
43.091	43.048 "		
44.182	44.147 "		
45.273	45.290 "		
46.364	46.404 "		
47.455	47.459 "		
48.545	48.527 "		
49.636	49.612 "		
50.727	50.782 "		
51.818	51.888 "		
52.909	52.827 "		

TRACKING DATA ONLY - LAB TEST FIXTURE

#A6300A #16

#A6400A #82

A6300A

"B" Band

Calculated Straight Line Frequency	Actual Frequency ± 150 KC		
53.000	52.927 Mc		
54.091	53.950 "		
55.182	55.099 "		
56.273	56.272 "		
57.364	57.373 "		
58.455	58.374 "		
59.545	59.507 "		
60.636	60.691 "		
61.727	61.785 "		
62.818	62.848 "		
63.909	63.872 "		
65.000	64.966 "		
66.091	66.106 "		
67.182	67.224 "		
68.273	68.393 "		
69.364	69.496 "		
70.455	70.551 "		
71.545	71.631 "		
72.636	72.701 "		
73.727	73.842 "		
74.818	74.915 "		
75.909	75.824 "		

TRACKING DATA ONLY - LAB TEST FIXTURE

TEST: A6400A Buffer Output	SPEC: SC-A-400369	PAR: 8.2,8.3,8.4	TEST NO:
TEST CONDITIONS: Paragraph 5.0 of SC-A-400369			DATE: 3-21-77
MATERIAL: New A6400A Transmit Buffer Amplifier Boards			TEMP: Ambient RH:
MANUFACTURER: E-Systems, Inc., Memcor Division			M. NO: As Shown
INSTRUMENTS: Test Fixture Set NR. 323861 Two Boonton Model 91-CA RF VTVM			TESTED BY: K.P. Yelton LAB.SUP.CHECK: ENGRG. CHECK:

UNIT NO.	Oscillator - Buffer Frequency Control		Output Level High PWR (V)	Output Level Low PWR (mV)	
	Band	Setting			
70	A	000	2.35	430	
70	A	200	2.20	420	
70	A	420	1.6	320	
70	B	000	2.35	430	
70	B	200	3.0	370	
70	B	420	1.6	300	
71	A	000	2.0	410	
71	A	200	2.4	390	
71	A	420	1.95	340	
71	B	000	2.75	430	
71	B	200	2.55	350	
71	B	420	2.0	280	
72	A	000	2.1	420	
72	A	200	2.35	410	
72	A	420	1.75	350	
72	B	000	2.4	440	
72	B	200	2.35	360	
72	B	420	1.9	275	
73	A	000	2.15	420	
73	A	200	2.6	440	
73	A	420	2.0	380	
73	B	000	2.7	460	
73	B	200	2.6	370	
73	B	420	2.2	300	
78	A	000	2.1	440	
78	A	200	2.45	440	
78	A	420	1.95	380	
78	B	000	2.7	460	
78	B	200	2.5	380	
78	B	420	2.1	300	

TEST: A6400A Buffer Output	SPEC: SC-A-400369	PAR: 8.2, 8.3, 8.4	TEST NO:
TEST CONDITIONS: Paragraph 5.0 of SC-A-400369			DATE: 3-25-77
MATERIAL: New A6400A Transmit Buffer Amplifier Boards			TEMP: Ambient RH:
MANUFACTURER: Memcor			M. NO: As Shown
INSTRUMENTS: Test Fixture Set NR. 323861 Two Boonton Model 91-CA RF VTVM			TESTED BY: K.P. Yelton LAB. SUP. CHECK: ENGRG. CHECK:

UNIT NO.	Osillator - Buffer Frequency Control		Output Level High PWR (V)	Output Level Low PWR (mV)	
	Band	Setting			
79	A	000	2.2	420	
79	A	200	2.55	390	
79	A	420	1.9	320	
79	B	000	2.7	430	
79	B	200	2.6	360	
79	B	420	2.25	270	
80	A	000	2.25	470	
80	A	200	2.5	410	
80	A	420	1.85	390	
80	B	000	2.75	480	
80	B	200	2.55	400	
80	B	420	2.1	320	
82	A	000	2.35	380	
82	A	200	2.5	370	
82	A	420	1.9	320	
82	B	000	2.8	380	
82	B	200	2.65	320	
82	B	420	2.14	250	
83	A	000	2.2	400	
83	A	200	2.5	380	
83	A	420	1.9	320	
83	B	000	2.7	410	
83	B	200	2.45	350	
83	B	420	2.1	370	
84	A	000	2.25	420	
84	A	200	2.55	410	
84	A	420	1.9	360	
84	B	000	2.7	450	
84	B	200	2.6	370	
84	B	420	2.1	290	

TEST: A7000A	SPEC: SM-C-414770	PAR:	TEST NO: 2
TEST CONDITIONS: Siliconized Null Switch (2N5681)			DATE: 9-14-76
MATERIAL:			TEMP: RH:
MANUFACTURER:			M. NO: Y. Min
INSTRUMENTS: Scope HP 181A; Audio Generator HP 201C; VTVM Ballantine 314C			TESTED BY: LAB.SUP.CHECK ENGRG. CHECK:

TEST	5msec pulse 22V COMPLETION TIME	5msec pulse 25.5V COMPLETION TIME	5msec pulse 30V COMPLETION TIME	SENSITIVITY @ 400 Hz		
UNIT \ SPEC	1.0±0.3 Sec	1.0±0.3 Sec	1.0±0.3 Sec	3.5V Max		
#11	.80	.82	.90	2.40		
12	.75	.80	.85	2.5		
13	.72	.75	.75	3.1		
14	.80	.80	.80	2.35		
15	.90	.90	.90	2.2		
16	.90	.90	.92	3.15		
17	.92	.95	.95	2.05		
18	.80	.85	.85	2.8		
19	.80	.80	.80	2.95		
20	.75	.80	.85	2.50		

TEST: A7200A	SPEC: SC-A-400364B	PAR: See Below	TEST NO:
TEST CONDITIONS:			DATE: 5-14-76
MATERIAL:			TEMP: RH:
MANUFACTURER:			M. NO:
INSTRUMENTS:			TESTED BY: Y. Min
Audio Generator HP206A 1171 5-6-76			LAB.SUP.CHECK
Input VTVM HP3303 752 5-13-76			
Output VTVM Ballantine 0730 2-16-76			
DC Milliameter Simpson 1-23-76			ENGRG. CHECK:
Government Gage A7200 12-13-75			

TEST	9.1 D.C. CURRENT	9.2 IMPEDANCE	9.3 GAIN	9.4 SATURATION	NOTE
Spec.	49-62 mA	@400 Hz 5.9 mV Min	@12.5 mV Input 7.3 V Min	26.4 - 38 V	
1	41	7.1	10.3	30	
2	37	7.1	10.1	28	
3	39	7.3	9.7	27.3	
4	40	7.2	11.0	29.0	
5	41	7.1	10.3	27.5	
6	36	7.1	10.5	28.5	
7	41	7.2	10.8	29	
8	37	7.1	9.5	27.5	
9	37	7.1	10.9	28.5	
10	43	7.2	10.3	27.5	
11	34	7.1	10.8	27	
12	42	7.3	10.7	29	

TEST: A8100A Module Test Performance	SPEC:	PARA: See Below	TEST NO:
TEST CONDITIONS: Tested on Gov Gage NR323854-1 Calibrated 5-13-77			DATE: 8-19-77
MATERIAL: 11.5 Mc Modulator Built per this ECP			TEMP: RH:
MANUFACTURER: Memcor Division			M. NO:
INSTRUMENTS: HP206A Audio Generator Calibrated 8-4-77 HP330B Distortion Analyzer 8-11-77 HP400D Audio VTVM 6-6-77 CMC738A Frequency Counter 7-1-77 TF2300B Marconi Deviation Meter 6-29-77 Type 2006 B & K Hetrodyne Voltmeter 5-23-77 HP5216A Electronic Counter 7-19-77			TESTED BY: T. Phillips LAB. SUP. CHECK ENGRG. CHECK T. Phillips

Frequency	RF Level Para 8.2	Frequency Response Para 8.3 Modulation Frequency						Distortion Para 8.3 Modulation Frequency		
		500	1K	2K	3K	10K	20K	500	1K	3K
11.495-11.505	180 min	± .75 →	REF	← ± .75kc →				← 2.2 max →		
MHz	mV	← 6-10kc		kHz				← % →		
11.4991	264	0.0	8.3	0.0	0.0	-0.2	-0.6	0.4	0.4	0.5
11.4996	312	+0.1	8.8	0.0	+0.1	-0.1	-0.6	0.4	0.4	0.5
11.4993	300	0.0	8.3	0.0	0.0	0.0	-0.8	0.4	0.4	0.5
11.5008	290	-0.1	8.1	0.0	-0.2	-0.3	-0.8	0.4	0.4	0.5
11.5002	306	0.0	7.8	0.0	0.0	-0.1	-0.6	0.4	0.4	0.5
11.4999	286	0.0	8.6	0.0	-0.1	-0.3	-0.8	0.4	0.4	0.5
11.4996	290	0.0	7.8	0.0	-0.1	-0.3	-0.6	0.4	0.4	0.5
11.4974	290	0.0	8.7	-0.1	-0.3	-0.4	-1.0	0.3	0.3	0.4
11.5000	310	0.0	8.9	0.0	-0.1	-0.2	-0.7	0.4	0.4	0.5
11.5007	320	0.0	8.7	-0.1	-0.2	-0.3	-0.9	0.3	0.3	0.4

A8100A 11.5MHz MODULE FREQUENCY RESPONSE
Tested on Gov. Gage NR 323854-1 per SC-A-400362A

A8100A Modules from Radio S/N	Frequency Response (kc) With 36mv Input Modulation Frequency (cps) 500	1k	3k	10k	20k	20k Δ (kc)
19087	8.75	8.70	8.8	8.6	8.0	-0.7
18790	9.4	9.4	9.3	9.0	8.2	-1.2
18793	8.7	8.7	8.7	8.3	7.8	-0.9
18785	9.3	9.4	9.3	9.15	8.4	-1.0
1605	9.4	9.4	9.3	9.1	8.2	-1.2
18787	9.3	9.3	9.2	9.0	8.3	-1.0

XMTR AUDIO RESPONSE - WIDEBAND SYSTEM TEST
Per Para. 3.10.15.2 of MIL-R-55100D(EL)

Using A8100A with Silicon Transistor and Phase Inverted

Modulation Frequency (cps)
Modulation Frequency (cps)

Radio S/N	Dial Test Frequency	500	1k	5k	10k	20k	Δ dB
19087	30.00	9.3	9.2	9.6	9.7	11.7	2.1
	54.00	9.1	9.0	9.2	9.6	9.2	0.6
18790	30.00	8.75	8.7	9.0	9.2	11.2	2.2
	54.00	8.5	8.5	8.7	9.0	8.8	0.5
18793	30.00	8.6	8.5	8.6	8.8	10.4	1.7
	54.00	8.2	8.2	8.2	8.6	8.2	0.4
18785	30.00	9.2	9.2	9.4	9.8	11.4	1.8
	54.00	9.2	9.1	9.3	9.4	9.0	0.4
1605	30.00	8.6	8.6	8.6	8.9	10.5	1.7
	54.00	8.3	8.3	8.5	8.7	8.3	0.4
18787	30.00	8.8	8.8	8.8	9.4	10.7	1.7
	54.00	8.7	8.7	8.8	8.9	8.4	0.5
Using Germanium A8100 (original module of GFE radio)							
18787	30.00	9.6	9.6	9.6	10.2	13.0	2.6
	54.00	9.25	9.2	9.4	9.8	9.8	0.6

Transmitter Catching Range per MIL-R-55100(D) Para. 3.10.7

Using A8000 Modules with Silicon Transistors

Transmitter Catching Range
Limits - 750 kc minimum

Test Frequency	Ambient	$-40^{\circ}F$	$+160^{\circ}F$
35.00	- 1050 kc	1250 kc	1000
	+ 1850	1600	1600
57.00	- 1300	1500	1400
	+ 1950	1700	2000
48.00	- 1100	1350	1000
	+ 2750	2400	2300
71.00	- 1550	1850	1600
	+ 2750	2400	2700

GENERAL DATA SHEET

TEST: A8200 Module Performance Data	SPEC: 400359	PARA:	TEST NO:
TEST CONDITIONS: Tested on Gov Gage NR 323851			DATE: 5-10-77
MATERIAL:			TEMP: RH:
MANUFACTURER:			M. NO:
INSTRUMENTS: HP606B RF Generator Calibrated 3-3-77 HP606B RF Generator 3-18-77 HP413A DC Null Meter 3-7-77 HP5216A Frequency Counter 4-18-77 Type 535 Oscilloscope Tektronix 2-14-77			TESTED BY: T. Phillips LAB. SUP. CHECK ENGRG. CHECK T. Phillips

UNIT NO.	Gain Output at 11.5 Mc Para. 8.2 Volts P-P	Residual DC Voltage 11.0 to 12.0 MHz Para. 8.3 Volts DC			
	12.5 to 24.0	Max -1.2 to	Max +1.2		
11	19.0	-0.18	+0.38		
12	20.0	-0.26	+0.40		
13	20.5	-0.20	+0.70		
14	19.5	+0.10	+0.5		
15	21.0	-0.05	+0.70		
16	20.8	-0.10	+0.20		
17	21.0	-0.1	+0.7		
18	20.5	-0.20	0.0		
19	20.5	-0.35	+0.4		
20	20.6	-0.25	+0.5		

Transmitter Catching Range per MIL-R-55100(D) Para. 3.10.7

Using A8000 Modules with Silicon Transistors

Transmitter Catching Range

Limits - 750 kc minimum

Test Frequency	Ambient	-40°F	+160°F
35.00	- 1050 kc	1250 kc	1000
	+ 1850	1600	1600
57.00	- 1300	1500	1400
	+ 1950	1700	2000
48.00	- 1100	1350	1000
	+ 2750	2400	2300
71.00	- 1550	1850	1600
	+ 2750	2400	2700

TEST: AS300 Module Performance	SPEC: SC-A-400358	FAR: SEE BELOW	TEST NO:
TEST CONDITIONS:			DATE: 2-3-76
MATERIAL: A8300 Modified for Silicon Transistor JAN2N3251A			TEMP: Ambient RH:
MANUFACTURER: E-SYSTEMS, INC., MEMCOR DIVISION			M. NO:
INSTRUMENTS: Type 2006 B & K Hetrodyne Voltmeter Cal. 2-23-76; 91 CR Boonton RF Voltmeter Cal. 2-14-76; HP 606 RF Generator Cal. 2-6-76; HP 5216A Frequency Counter Cal. 1-20-76; N/R 323850-1 Gov't Furnished Gage Cal. 11-14-76			TESTED BY: T.E. Phillips; LAB.SUP.CHECK; ENGRG. CHECK:

UNIT NO.	RF OUTPUT (mV) WITH 500 mV IN @ 11.5 MHz	WITH 10 mV IN @ 11.5 MHz	WITH 10 mV IN @ 10.75 MHz	WITH 10 mV IN @ 12.25 MHz	COMPARISON 10.75 TO 12.25 MHz
	240/470 mV	150 mV Min.	4.5 dB Max.	4.5 dB Max.	2.25 dB Max.
	Para. 8.2.4	Para. 8.2.3	Para 8.3.6	Para. 8.3.2	Para. 8.3.7
WITH JAN2N499A					
1	350	216	1.9	1.5	0.4
2	340	214	1.8	1.5	0.3
3	350	215	2.2	1.5	0.7
4	356	210	2.0	1.3	0.7
5	348	186	0.9	0.8	0.1
6	340	215	1.9	1.0	0.9
7	360	205	1.1	0.6	0.5
8	350	200	1.2	0.7	0.5
9	370	205	1.1	1.1	0.0
10	370	210	0.5	0.6	0.1
AVERAGE	353.4	207.6	1.46	1.06	0.42
MODIFIED WITH JAN2N3251A C1=1pF, C9=10 pF, C8=390 pF					
1	376	216	1.7	1.4	0.3
2	368	250	1.7	1.9	0.2
3	370	216	1.5	1.5	0.0
4	380	200	1.2	0.9	0.3
5	375	250	2.0	1.9	0.1
6	367	210	1.4	1.4	0.0
7	400	230	2.5	1.8	0.7
8	390	230	2.1	2.1	0.0
9	390	215	1.8	1.6	0.2
10	400	245	1.2	2.0	0.8
AVERAGE	381.6	226.2	1.71	1.65	.36

TEST: A8400A Hunt Generator SPEC.: SC-A-400361B PARA:	TEST NO.:
TEST CONDITIONS: G-GAGE	DATE:
MATERIAL: A-8400A SILICON VERSION	TEMP.: RH:
MANUFACTURER:	M. NO.:
INSTRUMENTS:	TESTED BY: Y. MIN

Instrument				Cal Date
Test Fixture	323853-1			
Oscilloscope	TEK	535A	#6862	8-15-77
VTVM	HP	413A	#1297	8-19-77
Counter	CMC	738A	#0986	7-1-77

LAB. SUP. CHECK

ENGR. CHECK:

TEST	9.1 OUT-PUT	9.2 CUT-OFF VTG	9.3 HUNT FREQ							
SPEC	6.0 11.5V	+2.2 +5.8	90 - 265 Hz							
Module #	P-P	V_{DC}								
4	10.4V	3.6V	150 Hz							
24	9.5V	3.6V	146 Hz							
25	9.0V	3.5V	151 Hz							
36	9.7V	3.6V	142 Hz							
37	10.4V	3.8V	136 Hz							
38	9.5V	3.4V	156 Hz							
41	9.5V	3.5V	137 Hz							
48	10.0V	3.5V	147 Hz							
45	9.0V	3.8V	163 Hz							

TEST: A8500 Module Output	SPEC 400360 B	PARA See Below	TEST NO.
TEST CONDITIONS: Standard			DATE: 9-14-76
MATERIAL: A Version of A8500 Module on Govt Gauge			TEMP: Ambient
MANUFACTURER: Memcor			M. No.
INSTRUMENTS:	CAL DATE		TESTED BY S. Shastri
A8500 Govt Gauge	5-13-76		
HP 400D VTVM	6-7-76		LAB SUP CHECK
HP 330B Distortion Analyzer	8-12-76		
HP 206A Audio Signal Generator	8-5-76		ENGRG CHECK
Computer Measurement Co, Model 738A Frequency Counter	7-1-76		

UNIT NO.	@ 1.5 mV Input								@ 7.5 mV Input 1000 cps	
	OUTPUT		FREQUENCY RESPONSE			DISTORTION			Change In	
	Speech	Xmode	500	1 kHz	3 kHz	500 cps	1 kHz	3 kHz	AMPL	DIST
	para 9.1	para 9.3	para 9.2	para 9.2	para 9.2	para 9.4	para 9.4	para 9.4	para 9.3	para 9.4
Limits	41/31	1100/500	2.0 mx	ref	2.0 mx	5.0 mx	5.0 mx	5.0 mx	3.8 mx	7.0 mx
Units	mV	mV	dB	dB	dB	%	%	%	dB	%
1	34	550	-0.1	0	-0.5	1.2	1.0	0.5	1.8	4.4
2	32	690	+0.1	0	-0.7	0.6	0.8	0.5	2.0	3.0
3	34	690	-0.2	0	-0.5	1.2	1.1	0.5	1.8	4.6
4	34	640	-0.1	0	-0.6	0.8	1.0	0.4	2.1	4.0
5	35	580	-0.1	0	-0.5	1.0	1.1	0.3	1.9	4.2
6	34	670	-0.1	0	-0.5	0.95	1.0	0.4	2.0	4.1
7	34	630	-0.2	0	-0.5	0.95	1.0	0.4	1.7	4.3
8	34.5	560	-0.1	0	-0.4	1.0	1.1	0.4	2.0	3.7
9	34-	680	-0.1	0	-0.7	1.0	1.1	0.4	1.8	4.4
10	34	610	-0.2	0	-0.6	1.0	1.1	0.4	1.9	4.0

TEST: A9000A/A9400B POWER SUPPLY OUTPUT | SPEC: SM-D-414304 | PAR: As Shown | TEST NO:

TEST CONDITIONS: 25.5 VDC INPUT | DATE:

MATERIAL | TEMP: AMBIENT | RH:

MANUFACTURER: | M. NO:

INSTRUMENTS:
Engineering Lab Test Setup
Fluke Multi-Meter (8000A)
HP331A Distortion Analyzer

TESTED BY: K. Yelton

LAB. SUP. CHECK:

ENGRG. CHECK:

	PARA 7A (Plate)	PARA 7B (Screen)	PARA 7E (Bias)	PARA 7C (400 Hz)	PARA 7D Distortion
Unit \ Limit	700 VDC (MIN)	280 VDC (MIN)	-16.5 ± 1.5 VDC	113 VRMS (MIN)	10% (MAX)
0	717	302	-15.7	126	5%
1	703	296	-15.4	126	(Typically)
2	718	303	-15.7	131	
3	718	302	-15.8	130	
4	717	302	-15.4	132	
5	709	299	-15.5	128	
6	712	301	-15.8	117	
7	711	301	-15.7	123	
8	711	299	-15.6	118	
9	711	299	-15.6	122	
10	712	299	-15.6	121	
11	710	302	-15.6	123	
12	705	299	-15.7	124	
13	712	301	-15.5	117	
14	711	300	-15.6	120	
15	710	300	-15.6	128	
16	711	301	-15.6	123	
17	711	300	-15.6	117	
18	706	297	-15.6	130	
19	720	301	-15.8	117	
20	719	305	-15.8	127	
21	716	304	-15.7	115	5%

A9000A/A9400B TEST DATA

TABLE II

MOD NO.	E_{in} (V_{dc})	I_{in} (DC Amp)	TEST POINT MONITORS Plate (V_{dc})	Screen (V_{dc})	Bias (V_{dc})	AC (400 Hz) (VAC)	Temp Cond's	Temp Collector of Q9406	Monitor Collector of Q9401
	22.0	8.0	619	262	-13.6	93			
20	25.5	9.4	714	303	-15.7	126	AMB	82°F	82°F
	30.0	11.3	837	356	-18.5	166	(77°F)		
	22.0	8.0	622	263	-13.5	93			
20	25.5	9.3	719	305	-15.8	126	-40°C	8°F	7°F
	30.0	11.2	844	359	-18.5	165	(-40°F)		
	22.0	7.8	611	257	-13.4	93			
20	25.5	9.2	708	299	-15.6	125	+65°C	197°F	194°F
	30.0	11.0	825	350	-18.3	163	(+149°F)		

NOTES:

1. The data shown above was recorded using a lab test setup which simulates the loading conditions of an RT-246.
2. The unit under test (U.U.T.) was keyed to transmit during the entire test consisting of a minimum one (1) hour saturation at both temperature extremes.
3. Another typical unit was subjected to approximately three (3) hours of temperature extremes during the test period the U.U.T. was keyed to transmit several times to initiate a transistor breakdown attributable to surge currents. No failures could be induced.

A9000A/A9400B TEST DATA

TABLE III

E_{in} (V_{dc})	Test Point Monitor	At Room Temperature		At High Temp = +65°C		At -40°C	
		High Power @53 MHz	Low Power @53 MHz	High Power @ 53 MHz	Low Power @ 53 MHz	High Power @ 53 MHz	Low Power @ 53 MHz
22.0	Plate	627	685	631	683	636	685
	Screen	263	285	264	285	267	285
	Bias	-20.4	-16.6	-19.7	-16.4	-20.6	-16.7
	A.C.	80.0	83.9	83	87	78	82
25.5	Plate	726	793	732	791	736	795
	Screen	305	331	308	330	309	331
	Bias	-23.2	-19.4	-22.4	-19.2	-23.8	-19.4
	A.C.	109.7	115.4	113	117	109	113
30.0	Plate	848	929	853	929	851	931
	Screen	357	387	358	387	362	388
	Bias	-26.5	-22.8	-25.5	-22.4	-27.2	-22.8
	A.C.	149.1	155	149	154	152	154

NOTES:

1. The data shown above was recorded using actual radio testing. An RT-524 was used and Power Supply #9 was examined.
2. The U.U.T. was subjected to a minimum one (1) hour saturation at both temperature extremes. The U.U.T. was keyed and unkeyed approximately 1000 times during the test with no failures being induced.

TABLE IV

Test Frequency (MHz)	E_{in} (V_{dc})	OUTPUT HIGH POWER (W) @ Room Temp	@+65°C	@ -40°C
30.0	22.0	42.5	41.0	43.0
	25.5	57.5	56.0	59.0
	30.0	81.0	78.0	83.0
52.0	22.0	35.0	33.5	36.0
	25.5	47.5	45.0	49.0
	30.0	66.0	63.0	67.0
53.0	22.0	37.0	36.5	38.0
	25.5	50.0	49.0	51.5
	30.0	70.0	68.0	72.0
75.0	22.0	35.5	35.0	37.0
	25.5	48.0	47.5	48.0
	30.0	66.0	65.0	67.5

NOTES:

1. The data shown above was recorded using an RT-524.
2. The U.U.T. was subjected to a minimum one (1) hour saturation at both temperature extremes.
3. The limits are the following as defined in MIL-R-55100D (EL) Para 3.10.1:

   @ 22.0 VDC input, High Power Output = 25W (Min)

   @ 25.5 VDC and 30.0 VDC input, High Power Output = 35 W (Min)

APPENDIX D - Continued

AN/VRC-12 PIP
RADIO LEVEL TEST DATA

R-442

OPERATOR D. Gilead(?) /RP GROUP A UNIT SERIAL 3829

TIME ________ DATE 7/17/77 LOT NUMBER P/P

2.1.0 Distortion (Narrow)

60.05 mc @ 100 uv
Volume Control = 17.3v

22.0v	25.5v	30.0v
4.8%	3.8%	3.6%

Limit = 8.0% Max.

1.1 Muting

60.05 mc @ 100 uv
Volume Control = 17.3v

22.0v	25.5v	30.0v
5.4v	5.4v	5.4v

Limit = 5.0v min-6.0v max.

1.2 & 3.1 Loudspecker Output

60.05 mc @ 100uv
Volume Control = #

	22.0v	25.5v	30.0v
CW	21.6v	24.4v	25.9v

Limit = 17.3v min.

CCW .0008

Limit 0.38v max.

1.3 & 3.2 Headphone output

60.05 mc @ 100uv
Volume Control = #

	22.0v	25.5v	30.0v
CW	12.1v	13.6v	14.5v

Limit = 7.75v min.

CCW .0007v

Limit = 0.19v max.

1.4 & 3.3 Monitor Output

60.05 mc @ 100 uv
Volume Control - #

	22.0v	25.5v	30.0v
CW	.25v	.25v	.25v

Limit = 0.16v min-0.31v max.

CCW .268v

Limit = 0.16v min-0.31v max.

Ratio CCW/CW
Limit - 1.26db max.

.92

3-8138-2

4.0 Sensitivity

FR Level = 5.0 uv for Sens.

Volume Control = 17.3v

mc	22.0v	25.5v	30.0v
30.00	25 db	26 db	26 db
65.10	24.2 db	25 db	25 db
41.05	26 db	26 db	26 db
75.90	23 db	23 db	23 db
52.95	25 db	27 db	27 db
53.00	24 db	25 db	25 db
41.50	25 db	26 db	26 db
64.50	24 db	24 db	24 db
Limits	8db Min.	10bd Min.	10bd Min.

5.2 Noise Squelch

7.0 uv for Noise Squelch

	22.0v	25.5v	30.0v
30.00	2.6 uv	2.6 uv	2.6 uv
65.40	3.0 uv	3.0 uv	3.0 uv
41.50	2.0 uv	2.0 uv	2.0 uv
53.60	2.6 uv	2.6 uv	2.6 uv
52.70	2.0 uv	2.0 uv	2.0 uv
75.80	2.6 uv	2.6 uv	2.6 uv

Squelch & Call Lamp shall lifht and remain lit as RF level is reduced to 5.5 uv. Removing RF signal from antenna jack shall cause above condition to disappear in four (4) seconds.

5.0 Tone Squelch

RF Level = 5.0 uv
150 cycle mod. @ 3 kc dev.

mc	22.0v	25.5v	30.0v
30.00	1.9 uv	1.9 uv	1.9 uv
65.20	1.9 uv	1.9 uv	1.9 uv
41.30	1.9 uv	1.9 uv	1.9 uv
52.95	1.8 uv	1.8 uv	1.8 uv
53.00	1.8 uv	1.8 uv	1.8 uv
75.95	2.1 uv	2.1 uv	2.1 uv

6.0 Limiting

1-100kuv for Limiting

Volume Control - 17.3v

30.00	.1 db
75.95	.1 db
65.55	0 db
41.05	.1 db
53.00	0 db
52.10	0 db

Limits: 1 db Max.

Limits: Squelch and Call lamps shall remain lit while the RF level is reduced to 4.0 uv. Removal of the RF signal from the antenna jack will cause the above condition to disappear in one (1) second.

7/17/77
TED

Unit Serial 3829

7.0 Catching Range

RF Level - 100 μv

Freq.	22.0v	25.5v	30.0v	Limit	Freq.	22.0v	25.5v	30.0v
30.90	500	500	500	250 kc	41.95	550	550	550
31.90	500	500	500	250 kc	42.95	450	450	450
Sum	1000	1000	1000	850 kc	Sum	1000	1000	1000
31.95	550	550	550	250 kc	42.90	450	450	450
32.95	500	500	500	250 kc	43.90	550	550	550
Sum	1050	1050	1050	850 kc	Sum	1000	1000	1000
32.90	450	450	450	250 kc	43.95	500	500	500
33.90	550	550	550	250 kc	44.95	450	450	450
Sum	1000	1000	1000	850 kc	Sum	950	950	950
33.95	550	550	550	250 kc	44.90	400	400	400
34.95	450	450	450	250 kc	45.90	600	600	600
Sum	1000	1000	1000	850 kc	Sum	1000	1000	1000
34.90	550	550	550	250 kc	45.95	450	450	450
35.90	450	450	450	250 kc	46.95	500	500	500
Sum	1000	1000	1000	850 kc	Sum	950	950	950
35.95	550	550	550	250 kc	46.90	400	400	400
36.95	450	450	450	250 kc	47.90	600	600	600
Sum	1000	1000	1000	850 kc	Sum	1000	1000	1000
36.90	450	450	450	250 kc	47.95	450	450	450
37.90	550	550	550	250 kc	48.95	550	550	550
Sum	1000	1000	1000	850 kc	Sum	1000	1000	1000
37.95	550	550	550	250 kc	48.90	400	400	400
38.95	450	450	450	250 kc	49.90	600	600	600
Sum	1000	1000	1000	850 kc	Sum	1000	1000	1000
38.90	450	450	450	250 kc	49.95	400	450	450
39.90	550	550	550	250 kc	50.95	500	550	500
Sum	1000	1000	1000	850 kc	Sum	900	1000	950
39.95	600	600	600	250 kc	50.90	400	400	400
40.95	400	400	450	250 kc	51.90	600	600	600
Sum	1000	1000	1050	850 kc	Sum	1000	1000	1000
40.90	500	500	500	250 kc	51.95	550	550	550
41.90	500	500	500	250 kc	52.95	400	400	400
Sum	1000	1000	1000	850 kc	Sum	950	950	950

Sandy

GROUP "B" DATA SHEET

DATE 9-23-77 UNIT # 3724 LOT # Rig

FORM 3-8139-1

MAX. S+N/N Ratio)Para. 3.9.8)
Sig. Gen. @ 1000 µv; P.S. @ 25.5 VDC

30 mc 51 db 52.95 mc 58 db 45.80 mc 58 db
65.70 mc 57 db 75.85 mc 57 db 53.10 mc 59 db

Limit = -45.0 db

RESIDUAL PHASE (Para. 3.9.10)
Sig. Gen. CW @ 250 mv; P.S. @ 25.5 vdc

Neg. Swing -.09 vdc Pos. Swing +.02 dc

Limit = 0.17 vdc/swing

AUDIO RESPONSE (Para. 3.9.12.1)
Sig. Gen. @ 100 µv; P.S. @ 25.5 VDC

1 K 0 db 500 -.5 db 2 K -.4 db 3 K -.4 db

Limit = ± 2.0 db of 1 K

DESENSITIZATION (Para. 3.9.9)
P.S. @ 25.5 VDC

29.5 mc 80 mv 30.5 mc 80 mv 52.45mc 70 mv
53.45mc 100 mv 52.55mc 70 mv 53.55mc 90 mv
74.6 mc 60 mv 75.6 mc 30 mv
Limit = 25 mv sig. shall not degrade 26db 6db

VFO MODULATION SENS (Para. 3.9.13)
P.S. @ 25.5 VDC

	53.5mc	63.5mc	74.5mc
-0.5vdc	2085	2187	3225
+0.5vdc	1701	1777	2831
Diff.	384	410	394

Limit = 300 kc to 600 kc

VFO MODULATION CAP. (Para. 3.9.14)
P.S. @ 25.5 VDC; FR = Free Running

53.5mc -1.5vdc 2409 FR 1903
FR 1903 +1.5vdc 1228
Diff 503 kc Diff 675 kc

63.5mc -1.5vdc 2534 FR 1990
FR 1990 +1.5vdc 1279
Diff 544 kc Diff 711 kc

74.5mc -1.5vdc 3741 FR 3089
FR 3089 +1.5vdc 2228
Diff 652 Diff 861 kc

Limit = 450 kc to 950 kc

MC SHORTING (Para. 3.9.16)
P.S. @ 25.5 VDC; CF = Center Frequency

	31.50	41.50	51.50
CF	2903	2957	3091
-Stress	2554	2627	2727
Diff	349 kc	330 kc	364 kc
-Stress	3291	3357	3463
CF	2894	2912	3054
Diff	397	445	409

Limit = 150 kc

VFO RESETABILITY (Para. 3.9.16)
Input 25.5V Limit: Diff. between 2 of 5 settings not greater than 85 kc.

31.5 mc

cw	2885	2886	2884	2884	2879
ccw	2911	2910	2918	2918	2933
dif	26	24	34	34	34

41.5

cw	2903	2895	2912	2909	2906
ccw	2952	2956	2953	2947	2953
dif	49	61	41	41	47

51.5

cw	3058	3077	3067	3064	3067
ccw	3093	3095	3093	3092	3094
dif	35	18	26	28	17

VFO TEMP. STABILITY (Para. 3.9.15)

		22 V	25.5 V	30 V
53.5 mc	-40 C			
	Amb			
	dif			
63.5 mc	-40 C			
	Amb			
	dif			
74.5 mc	-40 C			
	Amb			
	dif			
53.5 mc	+65 C			
	Amb			
	dif			
63.5 mc	+65 C			
	Amb			
	dif			
74.5 mc	+65 C			
	Amb			
	Dif			

Limit: Diff. shall not be 180 kc when reset or 130 kc when not reset.

DATA SHEET

Equipment R442	Serial No. 3829	E-Systems/MEMCOR
B TEST	VFO	DAAB07-76-C-0[illegible]35
Tested by: D Huffman	Witness by:	Date: 14 OCT 77
Lot: PIP		

MODULATOR SENS. (para. 3.10.9)

		30.00	45.00	52.00	53.00	68.00	75.00
+77	-1vdc						
	+1vdc						
	Diff						
	Diff/2						

Limit - 30mc to 52mc - 240 to 650Kc / 53mc to 75mc - 275 to 650Kc

		30.00	45.00	52.00	53.00	68.00	75.00
-40	-1vdc						
	+1vdc						
	Diff						
	Diff/2						

Limit - 30mc to 52mc - 230 to 660Kc / 53mc to 75mc - 275 to 650Kc

		30.00	45.00	52.00	53.00	68.00	75.00
+150	-1vdc						
	+1vdc						
	Diff						
	Diff/2						

Limit - 30mc to 52mc - 230 to 660Kc / 53mc to 75mc - 265 to 665Kc

VFO TEMP. STABILITY (para. 3.9.15)

		22.0V	25.5V	30.0V			22.0V	25.5V	30.0V
53.50	-40C	41987	41991	41994	53.50	+65C	41949	41952	41955
	Amb.	41990	41994	41996		Amb.	41990	41994	41996
	Dif.	3	3	2		Dif.	41	41	41
63.50	-40C	51957	51971	51982	63.50	+65C	51952	51967	51977
	Amb.	51981	51996	52007		Amb.	51981	51996	52007
	Dif.	24	25	25		Dif.	39	39	30
74.50	-40C	63053	63055	63056	74.50	+65C	63064	63066	63068
	Amb.	63092	63094	63095		Amb.	63092	63094	63095
	Dif.	39	41	39		Dif.	28	28	27

Limit - Diff. shall not be 180Kc when reset or 130Kc when not reset.

RT-246

GROUP "A"

INSPECTOR Landy P.P. UNIT NO. 1605 LOT NO. PIP

TIME ______ DATE 9-16-77

3-8138-1

TONE MODULATION (Para. 3.10.3)
Input 25.5V Freq. 40.10 MC

Old OFF-Tone Osc. 150 CPS
Dev. 3.1 KC

New OFF-Tone Osc. 150 CPS
Dev. 3.1 KC

New ON-Tone Osc. 150 CPS
Dev. 3.1 KC

LIMIT: Tone Osc. 148-152 CPS. Dev. 2.5-35KC

SIDETONE (Para. 3.10.5)
Input 25.5V Freq. 40.10 MC

Speaker-Limit: 3.87V to 7.75V 6.1
Headphone-Limit: 6.14V to 9.74V 8.6

DISTORTION (Para 3.19.4.1)
Freq. 40.10 MC - Input 22V 1.4
25.5V 1.4
30V 1.4

LIMIT: 10%

MAX. S+N/N RATIO (PARA. 3.10.13)

Freq. 75.95 MC - Input 22V 48.
25.5V 48.
30V 47.4

LIMIT: -35db

DEVIATION (Para. 3.10.18.1)

30MC 22V	8.0	54MC	8.2
25.5V	8.0		8.2
30V	8.0		8.2
52MC 22V	8.0	75MC	8.2
25.5V	8.0		8.2
30V	8.0		8.2

LIMIT: 6 to 10 KC

CATCHING RANGE (Para. 3.10.7)
Input 25.5V

35 MC - Diff. KC 2850
+ Diff. KC 1200

57 MC - Diff 3050
+ Diff. 1300

48 MC - Diff. KC 3800
+ Diff. KC 1400

70 MC - Diff. 3850
+ Diff. 1700

LIMIT: Diff. must be 750 KC

POWER OUT (Para. 3.10.1 & 3.10.2)

LOW POWER

	22V	25.5	30V
30MC	3.6	5.0	7.5
65.20MC	2.2	3.1	5.0
41.05MC	3.6	3.0	7.5
75.96MC	3.1	4.2	6.5
52.90MC	3.5	4.5	6.9
53.00MC	4.5	6.2	10.2

LIMIT: Low Power 22V ½ W Min.
25.5V ½ to 8 W
30V 10 W Max.

HIGH POWER

	22V	25.5	30V
30MC	36	46	65
65.20MC	33	43	60
41.05MC	38	49	70
75.95MC	30	39	55
52.90MC	32	40	59
53.00MC	33	49	60

LIMIT: High Power 22V 25W Min.
25.5V 35W Min. to 65 W Max.
30V 35W Min.

RESETABILITY (Para. 3.10.10)
Input 25.5 * Centered Freq.

41.50 MC + Detent 41352
- Detent 41311
Diff. 41

54.50 MC + Detent 54579
- Detent 54516
Diff. 63

51.50 MC + Detent 51502
- Detent 51461
Diff. 41

64.50 MC + Detent 64321
- Detent 64272
Diff. 49

74.50 MC + Detent 74551
- Detent 74510
Diff. 41

LIMIT: Detent 150 KC Max. ± Stress 150 Min.

MODULATION CAPABILITY (Para. 3.10.6) #1605
Input 25.5V
FORM 3-8138-2

	500	1000	2000	3000	10,000	20,000
35MC	>28Kc	>28Kc	>28Kc	>28Kc	>30Kc	>30Kc
48MC	>28Kc	>28Kc	>28Kc	>28Kc	>30Kc	>30Kc
57MC	>28Kc	>28Kc	>28Kc	>28Kc	>28Kc	>30Kc
70MC	>28Kc	>28Kc	>28Kc	>28Kc	>28Kc	>28Kc

LIMIT: 25KC

AUTO FREQ SELECTION (Para. 3.10.8)

25.5		52.95	52.20	30.30	30.45	53.00	25.95	53.70	53.50	53.90
	30.30	✓	✓	✓	✓	✓	✓	✓	✓	

LIMIT: No error in selection - 5 sec MAX from 30 MC to 52.95 MC ✓
5 sec MAX from 52.95 MC to 30 MC ✓
Selection shall repeat from both directions

XMTR GROUP "B"

FREQ. STABILITY (Para. 3.10.11)
Input 25.5V

30.00	+1.8	51.00	+1.7	53.00	-2.4	75.00	-2.4
30.05	+1.0	51.05	+1.0	53.05	-3.1	75.05	-3.5
30.10	+1.0	51.10	+0.9	53.10	-3.1	75.10	3.5
30.15	+1.7	51.15	+1.7	53.15	-2.4	75.15	-2.5
30.20	+1.7	51.20	+1.6	53.20	-2.4	75.20	-2.8
30.25	+1.1	51.25	+1.1	53.25	-3.0	75.25	-2.5
30.30	+1.1	51.30	+1.0	53.30	-3.0	75.30	-2.4
30.35	+2.0	51.35	+1.9	53.35	-2.1	75.35	-1.9
30.40	+2.0	51.40	+1.9	53.40	-2.2	75.40	-1.9
30.45	+1.1	51.45	+1.0	53.45	-3.0	75.45	-3.1
30.50	+1.1	51.50	+1.0	53.50	-3.1	75.50	-3.0
30.55	+2.3	51.55	+2.2	53.55	-1.9	75.55	-2.2
30.60	+2.2	51.60	+2.2	53.60	-1.9	75.60	-2.1
30.65	+1.7	51.65	+1.6	53.65	-2.4	75.65	-3.0
30.70	+1.7	51.70	+1.6	53.70	-2.5	75.70	-3.0
30.75	+1.4	51.75	+1.3	53.75	-2.7	75.75	-2.4
30.80	+1.4	51.80	+1.3	53.80	-2.8	75.80	-2.8
30.85	+0.6	51.85	+0.6	53.85	-3.5	75.85	-3.1
30.90	+0.6	51.90	+0.6	53.90	-2.4	75.90	-3.1
30.95	+1.7	51.95	+1.7	53.95	-2.4	75.95	-2.4

41.00	+1.7	52.00	+1.7	64.00	-2.4
41.05	+1.0	52.05	+1.0	64.05	-3.1
41.10	+1.0	52.10	+0.9	64.10	-3.1
41.15	+1.7	52.15	+1.7	64.15	-2.4
41.20	+1.7	52.20	+1.6	64.20	-2.4
41.25	+1.1	52.25	+1.1	64.25	-3.0
41.30	+1.1	52.30	+1.0	64.30	-3.0
41.35	+1.9	52.35	+1.9	64.35	-2.1
41.40	+1.9	52.40	+1.9	64.40	-2.2
41.45	+1.0	52.45	+1.0	64.45	-3.0
41.50	+1.0	52.50	+1.0	64.50	-3.1
41.55	+2.2	52.55	+2.2	64.55	-1.9
41.60	+2.2	52.60	+2.2	64.60	-1.9
41.65	+1.6	52.65	+1.6	64.65	-2.4
41.70	+1.6	52.70	+1.7	64.70	-2.5
41.75	+1.3	52.75	+1.3	64.75	-2.8
41.80	+1.3	52.80	+1.3	64.80	-2.8
41.85	+0.6	52.85	+0.6	64.85	-3.5
41.90	+0.6	52.90	+0.6	64.90	-2.5
41.95	+1.7	52.95	+1.7	64.95	-2.4

LIMIT: ± 3.5 KC

OPERATOR SAHerrbery — GROUP A — UNIT SERIAL 1605

TIME ______ DATE 9/16/77 — LOT NUMBER P/P

2.1.0 Distortion (Narrow)

60.05 mc @ 100 uv
Volume Control = 17.3v

22.0v	25.5v	30.0v
3.8%	3.8%	3.8%

Limit = 8.0% Max.

1.1 Muting

60.05 mc @ 100 uv
Volume Control = 17.3v

22.0v	25.5v	30.0v
5.4v	5.4v	5.4v

Limit = 5.0v min-6.0v max.

1.2 & 3.1 Loudspecker Output

60.05 mc @ 100uv
Volume Control = #

	22.0v	25.5v	30.0v
CW	21.5v	23.4v	23.5v

Limit = 17.3v min.

CCW .03

Limit 0.38v max.

1.3 & 3.2 Headphone output

60.05 mc @ 100uv
Volume Control = #

	22.0v	25.5v	30.0v
CW	12.1v	13.1v	13.3v

Limit = 7.75v min.

CCW .018v

Limit = 0.19v max.

1.4 & 3.3 Monitor Output

60.05 mc @ 100 uv
Volume Control - #

	22.0v	25.5v	30.0v
CW	.225v	.226v	.226v

Limit = 0.16v min-0.31v max.

CCW .24v

Limit = 0.16v min-0.31v max.

Ratio CCW/CW
Limit - 1.26db max.

3-8138-2

4.0 Sensitivity

FR Level = 5.0 uv for Sens.

Volume Control = 17.3v

mc	22.0v	25.5v	30.0v
30.00	28.5db	28.5db	28.5db
65.10	27.5db	27.5db	27.5db
41.05	28 db	28 db	28 db
75.90	27.5db	27.5db	27.5db
52.95	29.5db	29.5db	29.5db
53.00	27.5db	27.5db	27.5db
41.50	28.5db	28.5db	28.5db
64.50	29.5db	29.5db	29.5db
Limits	8db Min.	10bd Min.	10bd Min.

5.2 Noise Squelch

7.0 uv for Noise Squelch

	22.0v	25.5v	30.0v
30.00	1.0uv	1.0uv	1.0 uv
65.40	1.0uv	1.0uv	1.0 uv
41.50	1.0 uv	1.0 uv	.09uv
53.60	1.0uv	1.0 uv	.09 uv
52.70	.09uv	.09uv	.08uv
75.80	1.0uv	1.0 uv	1.0 uv

Squelch & Call Lamp shall lifht and remain lit as RF level is reduced to 5.5 uv. Removing RF signal from antenna jack shall cause above condition to disappear in four (4) seconds.

5.0 Tone Squelch

RF Level = 5.0 uv
150 cycle mod. @ 3 kc dev.

mc	22.0v	25.5v	30.0v
30.00	.25 uv	.25 uv	.25 uv
65.20	1.2uv	1.2uv	1.2uv
41.30	.8 uv	.8 uv	.8 uv
52.95	.8 uv	.8 uv	.8 uv
53.00	.25 uv	.25 uv	.25 uv
75.95	1.1 uv	1.1 uv	1.1 uv

6.0 Limiting

1-100kuv for Limiting

Volume Control - 17.3v

30.00	0 db
75.95	0 db
65.55	0 db
41.05	0 db
53.00	0 db
52.10	0 db

Limits: 1 db Max.

Limits: Squelch and Call lamps shall remain lit while the RF level is reduced to 4.0 uv. Removal of the RF signal from the antenna jack will cause the above condition to disappear in one (1) second.

Unit Serial ____________

7.0 Catching Range

RF Level - 100 μv

Freq.	22.0v	25.5v	30.0v	Limit	Freq.	22.0v	25.5v	30.0v
30.90	600	600	600	250 kc	41.95	500	500	500
31.90	500	500	500	250 kc	42.95	450	450	450
Sum	1100	1100	1100	850 kc	Sum	950	950	950
31.95	550	550	550	250 kc	42.90	300	300	300
32.95	450	450	450	250 kc	43.90	600	600	600
Sum	1000	1000	1000	850 kc	Sum	900	900	900
32.90	350	350	350	250 kc	43.95	500	500	500
33.90	600	600	600	250 kc	44.95	500	500	500
Sum	950	950	950	850 kc	Sum	1000	1000	1000
33.95	500	500	500	250 kc	44.90	300	300	300
34.95	450	450	450	250 kc	45.90	650	650	650
Sum	950	950	950	850 kc	Sum	950	950	950
34.90	400	400	400	250 kc	45.95	450	450	450
35.50	550	550	550	250 kc	46.95	500	500	500
Sum	950	950	950	850 kc	Sum	950	950	950
35.95	550	550	550	250 kc	46.90	300	300	300
36.95	400	450	450	250 kc	47.90	650	650	650
Sum	950	1000	1000	850 kc	Sum	950	950	950
36.90	350	300	300	250 kc	47.95	450	450	450
37.90	600	650	650	250 kc	48.95	600	600	600
Sum	950	950	950	850 kc	Sum	1050	1050	1050
37.95	500	500	500	250 kc	48.90	300	300	300
38.95	500	500	500	250 kc	49.90	650	650	650
Sum	1000	1000	1000	850 kc	Sum	950	950	950
38.90	300	300	300	250 kc	49.95	450	450	450
39.90	650	650	650	250 kc	50.95	500	500	500
Sum	950	950	950	850 kc	Sum	950	950	950
39.95	550	550	550	250 kc	50.90	350	350	350
40.95	450	450	450	250 kc	51.90	600	600	600
Sum	950	1000	1000	850 kc	Sum	950	950	950
40.90	400	400	400	250 kc	51.95	550	550	550
41.90	550	550	550	250 kc	52.95	400	400	400
Sum	950	950	950	850 kc	Sum	950	950	950

GROUP "B" DATA SHEET

DATE 9/24/77 UNIT # 1605 LOT # FIP

FORM 3-8139-1

MAX. S+N/N Ratio)Para. 3.9.8)
Sig. Gen. @ 1000 µv; P.S. @ 25.5 VDC

30 mc 46 db 52.95 mc 47 db 45.80 mc 46 db
65.70 mc 46 db 75.85 mc 46 db 53.10 mc 46 db

Limit = -45.0 db

RESIDUAL PHASE (Para. 3.9.10)
Sig. Gen. CW @ 250 mv; P.S. @ 25.5 vdc

Neg. Swing 0 vdc Pos. Swing 0 vdc

Limit = 0.17 vdc/swing

AUDIO RESPONSE (Para. 3.9.12.1)
Sig. Gen. @ 100 µv; P.S. @ 25.5 VDC

1 K 0 db 500 .2 db 2 K .2 db 3 K ___ db

Limit = ± 2.0 db of 1 K

DESENSITIZATION (Para. 3.9.9)
P.S. @ 25.5 VDC

29.5 mc 55 mv 30.5 mc 60 mv 52.45mc 60 mv
53.45mc 70 mv 52.55mc 60 mv 53.55mc 65 mv
74.6 mc 60 mv 75.6 mc 40 mv
Limit = 25 mv sig. shall not degrade 26db 6db

VFO MODULATION SENS (Para. 3.9.13)
P.S. @ 25.5 VDC

	53.5mc	63.5mc	74.5mc
-0.5vdc	2086	2275	3175
+0.5vdc	1697	1875	2698
Diff.	389	400	477

Limit = 300 kc to 600 kc

VFO MODULATION CAP. (Para. 3.9.14)
P.S. @ 25.5 VDC; FR = Free Running

53.5mc -1.5vdc 2407 FR 1902
FR 1902 +1.5vdc 1220
Diff 505 kc Diff 682 kc

63.5mc -1.5vdc 2623 FR 2078
FR 2078 +1.5vdc 1366
Diff 545 kc Diff 712 kc

74.5mc -1.5vdc 3564 FR 2943
FR 2943 +1.5vdc 2123
Diff 621 Diff 720 kc

Limit = 450 kc to 950 kc

MC SHORTING (Para. 3.9.16)
P.S. @ 25.5 VDC; CF = Center Frequency

	31.50	41.50	51.50
CF	1901	2977	2946
-Stress	1612	2653	2501
Diff	289 kc	324 kc	445 kc
+Stress	2279	3409	3694
CF	1901	2977	2946
Diff	378	432	748

Limit = 150 kc

VFO RESETABILITY (Para. 3.9.16)
Input 25.5V Limit: Diff. between 2 of 5 settings not greater than 85 kc.

31.5 mc

cw	2890	2892	2895	2889	2894
ccw	2851	2853	2856	2853	2852
dif	39	39	39	36	42

41.5

cw	3003	2985	2999	2984	2980
ccw	2968	2978	2974	2970	2969
dif	35	07	25	14	11

51.5

cw	2945	2950	2946	2945	2944
ccw	2915	2910	2913	2915	2910
dif	30	40	33	30	34

VFO TEMP. STABILITY (Para. 3.9.15)

		22 V	25.5 V	30 V
53.5 mc	-40 C			
	Amb			
	dif			
63.5 mc	-40 C			
	Amb			
	dif			
74.5 mc	-40 C			
	Amb			
	dif			
53.5 mc	+65 C			
	Amb			
	dif			
63.5 mc	+65 C			
	Amb			
	dif			
74.5 mc	+65 C			
	Amb			
	Dif			

Limit: Diff. shall not be 180 kc when reset or 130 kc when not reset.

#1605

XMTR GROUP "B"

ANTENNA SWITCHING (Para. 3.10.2)
Input 25.5V

FORM 3-8139-2

33MC	High 200	56MC	High 200	JEP
	Low ~~200~~ 0		Low 0	
37MC	High 150	60MC	High 200	
	Low 100		Low 50	
42MC	High 200	65MC	High 200	
	Low 50		Low 50	
47.5 MC	High 150	70.5 MC	High 150	
	Low 50		Low 50	

LIMIT: ± 400 KC

MODULATOR SENS: (Para. 3.10.9)

		30mc	45mc	52mc	53mc	68mc	75mc
77°F	-Ivdc						
	+Ivdc						
	Diff						
	Diff/2						

LIMIT: 30 mc to 52mc - 240 to 650KC/53mc to 75mc - 275 to 650 KC

		30mc	45mc	52mc	53mc	68mc	75mc
-40°F	-Ivdc						
	+Ivdc						
	Diff						
	Diff/2						

LIMIT: 30mc to 52mc - 230 to 660 KC/52mc to 75mc - 275 to 650 KC

		30mc	45mc	52mc	53mc	68mc	75mc
150°F	+Ivdc						
	+Ivdc						
	Diff						
	Diff/2						

LIMITS: 30mc to 52mc - 230 to 660 KC/52mc to 75mc - 265 to 665 KC

DATA SHEET

Equipment RT246	Serial No. 1605	E-Systems/MEMCOR
B TEST	VFO	DAAB07-76-C-0035
Tested by: D. Huffman	Witness by:	Date: 13 OCT 77
Lot: PIP		

MODULATOR SENS. (para. 3.10.9)

		30.00	45.00	52.00	53.00	68.00	75.00
+77	-1vdc	30217	45112	52290	53174	68423	75442
	+1vdc	29635	44358	51396	52561	67594	74503
	Diff	582	754	894	613	829	939
	Diff/2	291	377	447	306.5	414.5	469.5

Limit - 30mc to 52mc - 240 to 650Kc / 53mc to 75mc - 275 to 650Kc

		30.00	45.00	52.00	53.00	68.00	75.00
-40	-1vdc	30143	45065	52225	53152	68392	75382
	+1vdc	29566	44286	51345	52541	67533	74445
	Diff	577	779	880	611	859	937
	Diff/2	288.5	389.5	440	305.5	429	468.5

Limit - 30mc to 52mc - 230 to 660Kc / 53mc to 75mc - 275 to 650Kc

		30.00	45.00	52.00	53.00	68.00	75.00
+150	-1vdc	30239	45134	52245	53128	68343	75304
	+1vdc	29656	44381	51351	52513	67522	74369
	Diff	583	753	894	615	821	935
	Diff/2	291.5	376.5	447	307.5	410.5	467.5

Limit - 30mc to 52mc - 230 to 660Kc / 53mc to 75mc - 265 to 665Kc

---

VFO TEMP. STABILITY (para. 3.9.15)

		22.0V	25.5V	30.0V			22.0V	25.5V	30.0V
53.50	-40C	41971	41974	41976	53.50	+65C	41922	41924	41926
	Amb.	41950	41952	41954		Amb.	41950	41952	41954
	Dif.	21	22	22		Dif.	28	28	2[illegible]
63.50	-40C	51965	51980	51992	63.50	+65C	51926	51940	51950
	Amb.	51966	51980	51991		Amb.	51966	51980	51991
	Dif.	-1	0	1		Dif.	40	40	41
74.50	-40C	62996	62996	62996	74.50	+65C	63014	63015	63016
	Amb.	63055	63055	63056		Amb.	63055	63055	63056
	Dif.	59	59	60		Dif.	41	40	4[illegible]

Limit - Diff. shall not be 180Kc when reset or 130Kc when not reset.

RT-524

OPERATOR D. Gibson T.P. GROUP A UNIT SERIAL 18788

TIME ____________ DATE 9/20/77 LOT NUMBER PIP

2.1.0 Distortion (Narrow)

60.05 mc @ 100 uv
Volume Control = 17.3v

22.0v	25.5v	30.0v
48%	38%	38%

Limit = 8.0% Max.

1.1 Muting

60.05 mc @ 100 uv
Volume Control = 17.3v

22.0v	25.5v	30.0v
5.4v	5.4v	15.4v

Limit = 5.0v min-6.0v max.

1.2 & 3.1 Loudspecker Output

60.05 mc @ 100uv
Volume Control = #

	22.0v	25.5v	30.0v
CW	21.5	23.6v	24.5
CCW	.17		

CW Limit = 17.3v min.

CCW Limit 0.38v max.

1.3 & 3.2 Headphone output
60.05 mc @ 100uv
Volume Control = #

	22.0v	25.5v	30.0v
CW	12 v	13.3v	13.8v
CCW	.09 v		

CW Limit = 7.75v min.

CCW Limit = 0.19v max.

1.4 & 3.3 Monitor Output

60.05 mc @ 100 uv
Volume Control - #

	22.0v	25.5v	30.0v
CW	.233 v	.233 v	.233
CCW	.249 v		

CW Limit = 0.16v min-0.31v max.

CCW Limit = 0.16v min-0.31v max.

Ratio CCW/CW
Limit - 1.26db max.
0.5 db

4.0 Sensitivity

FR Level = 5.0 uv for Sens.

Volume Control = 17.3v

mc	22.0v	25.5v	30.0v
30.00	22.5db	22.5db	22.5db
65.10	22.5db	21.7db	21.0 db
41.05	25.7db	26 db	26.7db TEP
75.90	19 db	19 db	19 db
52.95	19.0 db	19.0db	19.0db
53.00	19 db	19 db	19 db
41.50	24.6db	25.4db	25.4db
64.50	22.4db	21.6db	21.6db
Limits	8db Min.	10bd Min.	10bd Min.

5.2 Noise Squelch

7.0 uv for Noise Squelch

	22.0v	25.5v	30.0v
30.00	2.6uv	2.4uv	2.4uv
65.40	2.5uv	2.5uv	2.5uv
41.50	2.0 uv	2.0 uv	2.0 uv
53.60	2.6uv	2.6 uv	2.6uv
52.70	2.2uv	2.2uv	2.2uv
75.80	2.4uv	2.4uv	2.4uv

Squelch & Call Lamp shall lifht and remain lit as RF level is reduced to 5.5 uv. Removing RF signal from antenna jack shall cause above condition to disappear in four (4) seconds.

5.0 Tone Squelch

RF Level = 5.0 uv
150 cycle mod. @ 3 kc dev.

mc	22.0v	25.5v	30.0v
30.00	1.9 uv	1.9uv	1.9uv
65.20	~~2.2~~ 2.2 uv	2.2uv	2.2uv
41.30	1.8uv	1.8 uv	1.8 uv
52.95	1.8 uv	1.8uv	1.8 uv
53.00	2.2uv	2.2 uv	2.2uv
75.95	1.9 uv	1.9uv	1.9 uv

6.0 Limiting

1-100kuv for Limiting

Volume Control - 17.3v

30.00	.1 db
75.95	0 db
65.55	.1 db
41.05	0 db
53.00	0 db
52.10	0 db

Limits: 1 db Max.

Limits: Squelch and Call lamps shall remain lit while the RF level is reduced to 4.0 uv. Removal of the RF signal from the antenna jack will cause the above condition to disappear in one (1) second.

3-8138-2

TEF Unit Serial: 18788

7.0 Catching Range

RF Level - 100 uv

Freq.	22.0v	25.5v	30.0v	Limit	Freq.	22.0v	25.5v	30.0v
30.90	550	550	550	250 kc	41.95	600	600	600
31.90	450	450	450	250 kc	42.95	450	450	450
Sum	1000	1000	1000	250 kc	Sum	1050	1050	1050
31.95	600	600	600	250 kc	42.90	450	450	450
32.95	400	400	400	250 kc	43.90	600	600	600
Sum	1000	1000	1000	850 kc	Sum	1050	1050	1050
32.90	400	400	400	250 kc	43.95	550	550	550
33.90	550	550	550	250 kc	44.95	450	450	450
Sum	950	950	950	850 kc	Sum	1000	1000	1000
33.95	550	550	550	250 kc	44.90	450	450	450
34.95	450	450	450	250 kc	45.90	600	600	600
Sum	1000	1000	1000	850 kc	Sum	1050	1050	1050
34.90	550	550	550	250 kc	45.95	500	500	500
35.90	450	450	450	250 kc	46.95	550	550	550
Sum	1000	1000	1000	850 kc	Sum	1050	1050	1050
35.95	600	600	600	250 kc	46.90	400	400	400
36.95	400	400	400	250 kc	47.90	600	600	600
Sum	1000	1000	1000	850 kc	Sum	1000	1000	1000
36.90	450	450	450	250 kc	47.95	450	450	450
37.90	600	600	600	250 kc	48.95	550	550	550
Sum	1050	1050	1050	850 kc	Sum	1000	1000	1000
37.95	550	550	550	250 kc	48.90	400	400	400
38.95	500	500	500	250 kc	49.90	600	600	600
Sum	1050	1050	1050	850 kc	Sum	1000	1000	1000
38.90	400	400	400	250 kc	49.95	450	450	450
39.90	600	600	600	250 kc	50.95	550	550	550
Sum	1000	1000	1000	850 kc	Sum	1000	1000	1000
39.95	600	600	600	250 kc	50.90	400	400	400
40.95	450	450	450	250 kc	51.90	600	600	600
Sum	1050	1050	1050	850 kc	Sum	1000	1000	1000
40.90	550	550	550	250 kc	51.95	550	550	550
41.90	500	500	500	250 kc	52.95	450	450	450
Sum	1050	1050	1050	850 kc	Sum	1000	1000	1000

GROUP "A"

INSPECTOR *Landy*   UNIT NO. *18788*   LOT NO. *P10*

TIME   *TEF*   DATE *9-20-77*

3-8138-I

TONE MODULATION (Para. 3.10.3)
Input 25.5V Freq. 40.10 MC

Old OFF-Tone Osc. *151* CPS
Dev. *3.2* KC

New OFF-Tone Osc. *151* CPS
Dev. *3.2* KC

New ON-Tone Osc. *151* CPS
Dev. *3.2* KC

LIMIT: Tone Osc. 148-152 CPS. Dev. 2.5-35KC

SIDETONE (Para. 3.10.5)
Input 25.5V Freq. 40.10 MC

Speaker-Limit: 3.87V to 7.75V *6.0*
Headphone-Limit: 6.14V to 9.74V *9.1*

DISTORTION (Para 3.19.4.1)
Freq. 40.10 MC - Input 22V *1.8*
25.5V *1.8*
30V *1.8*

LIMIT: 10%

MAX. S+N/N RATIO (PARA. 3.10.13)

Freq. 75.95 MC - Input 22V *47.*
25.5V *47.*
30V *47.*

LIMIT: -35db

DEVIATION (Para. 3.10.18.1)

30MC 22V	*7.9*	54MC	*8.0*
25.5V	*7.9*		*8.0*
30V	*7.6*		*8.0*
52MC 22V	*7.9*	75MC	*8.1*
25.5V	*7.9*		*8.1*
30V	*7.9*		*8.1*

LIMIT: 6 to 10 KC

RESETABILITY (Para. 3.10.10)
Input 25.5 * Centered Freq.

41.50 MC + Detent *41303*
- Detent *41242*
Diff. *61*

51.50 MC + Detent *51446*
- Detent *51381*
Diff. *65*

64.50 MC + Detent *64232*
- Detent *64148*
Diff. *84*

74.50 MC + Detent *74604*
- Detent *74552*
Diff. *52*

54.50 MC + Detent *54291*
- Detent *54222*
Diff. *69*

LIMIT: Detent 150 KC Max. ± Stress 150 Min.

CATCHING RANGE (Para. 3.10.7)
Input 25.5V

35 MC - Diff. KC *1200*   57 MC - Diff. *1350*
+ Diff. KC *3100*   + Diff. *3700*

48 MC - Diff. KC *1400*   70 MC - Diff. *1900*
+ Diff. KC *3550*   + Diff. *3750*

LIMIT: Diff. must be 750 KC

POWER OUT (Para. 3.10.1 & 3.10.2)

LOW POWER

	22V	25.5	30V
30MC	*4.2*	*5.5*	*8.5*
65.20MC	*2.6*	*3.3*	*5.1*
41.05MC	*3.5*	*4.5*	*7.0*
75.96MC	*3.8*	*5.0*	*7.3*
52.90MC	*1.6*	*2.2*	*3.6*
53.00MC	*1.4*	*1.9*	*3.0*

LIMIT: Low Power 22V ½ W Min.
25.5V ½ to 8 W
30V 10 W Max.

HIGH POWER

	22V	25.5	30V
30MC	*42.*	*58*	*82*
65.20MC	*40.*	*50*	*75*
41.05MC	*41.*	*53*	*80*
75.95MC	*30*	*40*	*60*
52.90MC	*31.*	*40*	*60.*
53.00MC	*35*	*45*	*65.*

LIMIT: High Power 22V 25W Min.
25.5V 35W Min. to 65 W Max.
30V 35W Min.

MODULATION CAPABILITY (Para. 3.10.6)
Input 25.5V

K Phillips 9-20-77

FORM 3-8138-2

	500	1000	2000	3000	10,000	20,000
35MC	730	730	730	730	730	730
48MC	730	730	730	730	730	730
57MC	730	730	730	730	730	730
70MC	730	730	730	730	730	730

LIMIT: 25KC

AUTO FREQ SELECTION (Para. 3.10.8)

25.5 ___ ___ ___ ___ ___ ___ ___ ___ ___

___ ___ ___ ___ ___ ___ ___ ___ ___ ___

LIMIT: No error in selection - 5 sec MAX from 30 MC to 52.95 MC
5 sec MAX from 52.95 MC to 30 MC
Selection shall repeat from both directions

XMTR GROUP "5"

FREQ. STABILITY (Para. 3.10.11)
Input 25.5V

30.00	-04	51.00	-01	53.00	-1.8	75.00	-1.4
30.05	-07	51.05	-01	53.05	-1.6	75.05	-1.3
30.10	-03	51.10	00	53.10	-1.7	75.10	-1.4
30.15	-06	51.15	-03	53.15	-2.0	75.15	-1.7
30.20	-01	51.20	-04	53.20	-2.1	75.20	-1.7
30.25	-1.0	51.25	-07	53.25	-2.4	75.25	-2.1
30.30	-1.1	51.30	-08	53.30	-2.5	75.30	-2.2
30.35	-04	51.35	-01	53.35	-1.7	75.35	-1.4
30.40	-04	51.40	-01	53.40	-1.8	75.40	-1.5
30.45	-1.0	51.45	-07	53.45	-2.4	75.45	-2.1
30.50	-1.0	51.50	-07	53.50	-2.5	75.50	-2.1
30.55	-04	51.55	-06	53.55	-2.3	75.55	-2.0
30.60	-04	51.60	-06	53.60	-2.4	75.60	-2.0
30.65	-1.4	51.65	-1.3	53.65	-3.0	75.65	-2.7
30.70	-1.7	51.70	-1.4	53.70	-3.1	75.70	-2.8
30.75	-1.3	51.75	-09	53.75	-2.6	75.75	-2.2
30.80	-1.2	51.80	-09	53.80	-2.7	75.80	-2.3
30.85	-1.2	51.85	-04	53.85	-2.7	75.85	-2.3
30.90	-1.3	51.90	-1.0	53.90	-2.7	75.90	-2.4
30.95	-03	51.95	00	53.95	-1.8	75.95	-1.4

41.00	-07	52.00	-01	64.00	-1.6
41.05	-01	52.05	-01	64.05	-1.5
41.10	-01	52.10	-01	64.10	-1.5
41.15	-05	52.15	-03	64.15	-1.9
41.20	-05	52.20	-03	64.20	-1.9
41.25	-09	52.25	-06	64.25	-2.2
41.30	-09	52.30	-07	64.30	-2.3
41.35	-02	52.35	00	64.35	-1.6
41.40	-02	52.40	-01	64.40	-1.7
41.45	-07	52.45	-06	64.45	-2.2
41.50	-09	52.50	-07	64.50	-2.3
41.55	-07	52.55	-05	64.55	-2.2
41.60	-08	52.60	-06	64.60	-2.2
41.65	-1.5	52.65	-1.2	64.65	-2.9
41.70	-1.5	52.70	-1.3	64.70	-2.9
41.75	-1.0	52.75	-08	64.75	-2.5
41.80	-1.1	52.80	-04	64.80	-2.5
41.85	-1.0	52.85	-00	64.85	-2.5
41.90	-1.1	52.90	-04	64.90	-2.5
41.95	[illegible]	52.95	-01	64.95	-1.9

LIMIT: ± 3.5 KC

Sandy

GROUP "B" DATA SHEET

DATE 9-24-77 UNIT # 18788 LOT # RIP

FORM 3-8139-1

KY. 9-24-77

MAX. S+N/N Ratio)Para. 3.9.8)
Sig. Gen. @ 1000 µv; P.S. @ 25.5 VDC

30 mc 48.4 db 52.95 mc 58.4 db 45.80 mc 58.4 db
65.70 mc [illegible] db 75.85 mc [illegible] db 53.10 mc [illegible] db

Limit = -45.0 db

RESIDUAL PHASE (Para. 3.9.10)
Sig. Gen. CW @ 250 mv; P.S. @ 25.5 vdc

Neg. Swing -.03 vdc Pos. Swing +.09 vdc

Limit = 0.17 vdc/swing

AUDIO RESPONSE (Para. 3.9.12.1)
Sig. Gen. @ 100 µv; P.S. @ 25.5 VDC

1 K 0 db 500 -.4 db 2 K -.6 db 3 K -.2 db

Limit = ± 2.0 db of 1 K

DESENSITIZATION (Para. 3.9.9)
P.S. @ 25.5 VDC

29.5 mc 100 mv 30.5 mc 60 mv 52.45 mc 70 mv
53.45 mc 75 mv 52.55 mc 60 mv 53.55 mc 70 mv
74.6 mc 60 mv 75.6 mc 55 mv
Limit = 25 mv sig. shall not degrade 26db 6db

VFO MODULATION SENS (Para. 3.9.13)
P.S. @ 25.5 VDC

	53.5mc	63.5mc	74.5mc
-0.5vdc	2143	2211	3368
+0.5vdc	1742	1789	2857
Diff.	401	422	511

Limit = 300 kc to 600 kc

VFO MODULATION CAP. (Para. 3.9.14)
P.S. @ 25.5 VDC; FR = Free Running

53.5mc -1.5vdc 2480 FR 1952
FR 1952 +1.5vdc 1246
Diff 528 kc Diff 706 kc

63.5mc -1.5vdc 2568 FR 2009
FR 2009 +1.5vdc 1274
Diff 559 kc Diff 735 kc

74.5mc -1.5vdc 3797 FR 3124
FR 3124 +1.5vdc 2230
Diff 673 Diff 894 kc

Limit = 450 kc to 950 kc

MC SHORTING (Para. 3.9.16)
P.S. @ 25.5 VDC; CF = Center Frequency

	31.50	41.50	51.50
CF	2875	2975	3078
-Stress	2532	2600	2661
Diff	343 kc	375 kc	417 kc
+Stress	3273	3523	3393
CF	2915	2941	3054
Diff	358	582	339

Limit = 150 kc

VFO RESETABILITY (Para. 3.9.16)
Input 25.5V Limit: Diff. between 2 of 5 settings not greater than 85 kc.

31.5 mc

cw	2877	2881	2889	2876	2875
ccw	2931	2940	2933	2931	2943
dif	54	59	44	55	68

41.5

cw	2937	2923	2927	2929	2927
ccw	2949	2968	2934	2950	2949
dif	12	45	7	21	22

51.5

cw	3045	3036	3045	3043	3043
ccw	3064	3054	3059	3068	3059
dif	19	18	14	25	16

VFO TEMP. STABILITY (Para. 3.9.15)

		22 V	25.5 V	30 V
53.5 mc	-40 C			
	Amb			
	dif			
63.5 mc	-40 C			
	Amb			
	dif			
74.5 mc	-40 C			
	Amb			
	dif			
53.5 mc	+65 C			
	Amb			
	dif			
63.5 mc	+65 C			
	Amb			
	dif			
74.5 mc	+65 C			
	Amb			
	Dif			

Limit: Diff. shall not be 180 kc when reset or 130 kc when not reset.

XMTR GROUP "B"

Rip

FORM 3-8839-2

18758

ANTENNA SWITCHING (Para. 3.10.2)
Input 25.5V

33MC	High	150	56MC	High	150
	Low	50		Low	100
37MC	High	50	60MC	High	50
	Low	150		Low	150
42MC	High	150	65MC	High	150
	Low	50		Low	50
47.5 MC	High	250	70.5 MC	High	250
	Low	50		Low	50

LIMIT: ± 400 KC

MODULATOR SENS: (Para. 3.10.9)

		30mc	45mc	52mc	53mc	68mc	75mc
77°F	-Ivdc						
	+Ivdc						
	Diff						
	Diff/2						

LIMIT: 30 mc to 52mc - 240 to 650KC/53mc to 75mc - 275 to 650 KC

		30mc	45mc	52mc	53mc	68mc	75mc
-40°F	-Ivdc						
	+Ivdc						
	Diff						
	Diff/2						

LIMIT: 30mc to 52mc - 230 to 660 KC/52mc to 75mc - 275 to 650 KC

		30mc	45mc	52mc	53mc	68mc	75mc
150°F	-Ivdc						
	+Ivdc						
	Diff						
	Diff/2						

LIMITS: 30mc to 52mc - 230 to 660 KC/52mc to 75mc - 265 to 665 KC

DATA SHEET

Equipment RTS24	Serial No. 18788	E-Systems/MEMCOR
B TEST -	VFO	DAAB03-76-C-0035
Tested by: DHuffman	Witness by:	Date: 13 OCT 77
Lot: PIP		

MODULATOR SENS. (para. 3.10.9)

		30.00	45.00	52.00	53.00	68.00	75.00
+77	-1vdc	30151	45059	52201	52921	68369	75488
	+1vdc	29587	44299	51327	52335	67547	74584
	Diff	564	760	874	586	822	904
	Diff/2	282	380	437	293	411	452
Limit -		30mc to 52mc - 240 to 650Kc / 53mc to 75mc - 275 to 650Kc					
-40	-1vdc	30164	45056	52204	52973	68361	75484
	+1vdc	29600	44267	51354	52385	67506	74573
	Diff	564	789	850	588	855	911
	Diff/2	282	394.5	425	294	427.5	455.5
Limit -		30mc to 52mc - 230 to 660Kc / 53mc to 75mc - 275 to 650Kc					
+150	-1vdc	30179	45071	52158	52916	68337	75396
	+1vdc	29615	44307	51282	52328	67523	74501
	Diff	564	764	876	588	814	895
	Diff/2	282	382	438	294	407	447.5
Limit -		30mc to 52mc - 230 to 660Kc / 53mc to 75mc - 265 to 665Kc					

VFO TEMP. STABILITY (para. 3.9.15)

		22.0V	25.5V	30.0V			22.0V	25.5V	30.0V
53.50	-40C	41996	41999	42001	53.50	+65C	41951	41953	41955
	Amb.	41992	41994	41996		Amb.	41992	41994	41996
	Dif.	4	5	5		Dif.	41	41	41
63.50	-40C	51970	51984	51994	63.50	+65C	51918	51933	51943
	Amb.	51970	51984	51995		Amb.	51970	51984	51995
	Dif.	0	0	1		Dif.	52	51	52
74.50	-40C	63087	63088	63088	74.50	+65C	63050	63051	63052
	Amb.	63102	63103	63104		Amb.	63102	63103	63104
	Dif.	15	15	16		Dif.	48	48	48

Limit - Diff. shall not be 180Kc when reset or 130Kc when not reset.

APPENDIX E

AN/VRC-12 PIP LIST OF ECP'S AND RFW'S FOR GOVERNMENT GAGE TEST

TABLE E-1. LIST OF ECP'S FOR THE AN/VRC-12 PIP

ECP NO.	TITLE
1R2	Germanium to Silicon Conversion Q8301 and Q8302
2R1	Germanium to Silicon Conversion, Q1401
3R3	A1600A Power Supply for VHF Tuner, Modified Version
5R2	A5100A Audio Amplifier Silicon Conversion
6R1	A3100 Germanium to Silicon Conversion, Q3101 Changed to JAN2N2907A
7R2	A8500A Speech Amplifier Assembly
8R1	A3600A Silicon Conversion, CRS Hunt Discriminator
9R1	A7200A Servo-Amplifier Assembly, Silicon Conversion
10R1	A4300A Audio and Squelch Pre-Amplifier
11	A2100 Silicon Update
12R1	A6400A Transmitter Buffer Amplifier
13R1	A2000 Crystal Switch
14	A3200A CRS Balanced Mixer, Silicon Conversion
18	A8400A XMTR Hunt Generator, Silicon Conversion
19	A9000A/A9400B Power Supply Assembly Redesign and Silicon Update
20	A4100A Silicon Conversion
21	A3700A Silicon Conversion
22R1	A3300A Silicon Conversion
23	A3400A Silicon Conversion
24	A3500A Silicon Conversion
25	A8100A Silicon Conversion
26	A8200A Silicon Conversion
27	A7000A Silicon Conversion
28	A4200A Silicon Conversion
29	Redesign of Squelch Modules A5200A/A5300A
30	A6300A Silicon Conversion
31	A1500A Silicon Conversion

TABLE E-2. LIST OF RFW'S FOR GOVERNMENT GAGE TESTS

RFW NO.	TITLE
1	IF Wide Band Selectivity @ -40 dB Bandwidth Test
2	A7200A Zero Signal DC Current Test
3	A4200A Gain, Frequency and Discriminator Test
4	A3200A Balanced Mixer Test
5	A4300A Audio and Pre-Amp Test
6	A8500A Transmitter Speech Test
7	A8100A 20 kHz Frequency Response Test
ECP 16	A1500A Government Gage Test Procedure Change
ECP 17	A6300A Government Gage Test Procedure Change

(SEE MIL-STD-480 OR 481 FOR INSTRUCTIONS)

6-24-77

1. ORIGINATOR NAME AND ADDRESS
E-SYSTEMS INC., MEMCOR DIVISION
41 E.Park Dr. Huntington, In 46750

2. [ ] DEVIATION [X] WAIVER

3. [ ] MINOR [ ] MAJOR [ ] CRITICAL

4. DESIGNATION FOR DEVIATION/WAIVER

a. MODEL/TYPE	b. MFR. CODE	c. SYS. DESIG.	d. DEV/WAIVER NO.
RT-246 RT-524 R-442	83777	AN/VRC-12	RFW 1

5. BASE LINE AFFECTED: [ ] FUNCTIONAL [ ] ALLOCATED [ ] PRODUCT

6. OTHER SYSTEMS/CONFIGURATION ITEMS AFFECTED: [ ] YES [ ] NO

7. SPECIFICATIONS AFFECTED-TEST PLAN

	MFR. CODE	SPEC./DOC. NO.	SCN
a. SYSTEM			
b. ITEM		MIL-R-55099D	
c. TEST PLAN		MIL-R-55100D	

8. DRAWINGS AFFECTED

MFR. CODE	NUMBER	REV.	NOR. NO.

9. TITLE OF DEVIATION/WAIVER
Wide Band IF Selectivity @-40dB Bandwidth

10. CONTRACT NO. & LINE ITEM
DAAB07-76-C-0135

11. CONFIGURATION ITEM NOMENCLATURE
AN/VRC-12, 43-49 Series

CLASSIFICATION OF DEFECT

12. CD NO.

13. DEFECT NO.

14. DEFECT CLASSIFICATION: [ ] MINOR [ ] MAJOR [ ] CRITICAL

15. NAME OF PART OR LOWEST ASSEMBLY AFFECTED
Receiver/Receiver-Transmitter

16. PART NO. OR TYPE DESIG.
SC-DL-413500
SC-DL-414825
SC-DL-414900

17. LOT NO.

18. QTY

19. RECURRING DEVIATION/WAIVER: [ ] YES [X] NO

20. EFFECT ON COST/PRICE
NONE

21. EFFECT ON DELIVERY SCHEDULE

22. EFFECT ON INTEGRATED LOGISTIC SUPPORT, INTERFACE, ETC.
NONE

23. DESCRIPTION OF DEVIATION/WAIVER

E-SYSTEMS, INC., MEMCOR DIVISION requests to use maximum limit of 6000 KHZ figure on performing the test listed in paragraph 3.9.18.2.b, wide bandwidth 40 dB points, of MIL-R-55099D and MIL-R-55100D.

24. NEED FOR DEVIATION/WAIVER

Pursuance of VRC-12 product improvement, an integrated circuit, LM3075, has been incorporated on A-4200A Module, which resulted in improved performance, high reliability, simple alignment and cost effectiveness.

As shown in attatched IC Diagram, it is not necessary to have seven ajustable coils, also it is not feasible to access inside of IC Amplifier stages to put coils. Since the 1st and 2nd IF Amplifier, A-4100A, has been re-designed with three resonant coils, the over-all IF response retains considerable selectivity.

25. PRODUCTION EFFECTIVITY BY SERIAL NUMBER

26. SUBMITTING ACTIVITY AUTHORIZING SIGNATURE
George Dutton 6-28-77 6/24/77

TITLE
Project Engineer/Quality

27. APPROVAL/DISAPPROVAL

a. [ ] APPROVAL RECOMMENDED

b. [ ] APPROVED [ ] DISAPPROVED

c. GOVERNMENT ACTIVITY

SIGNATURE

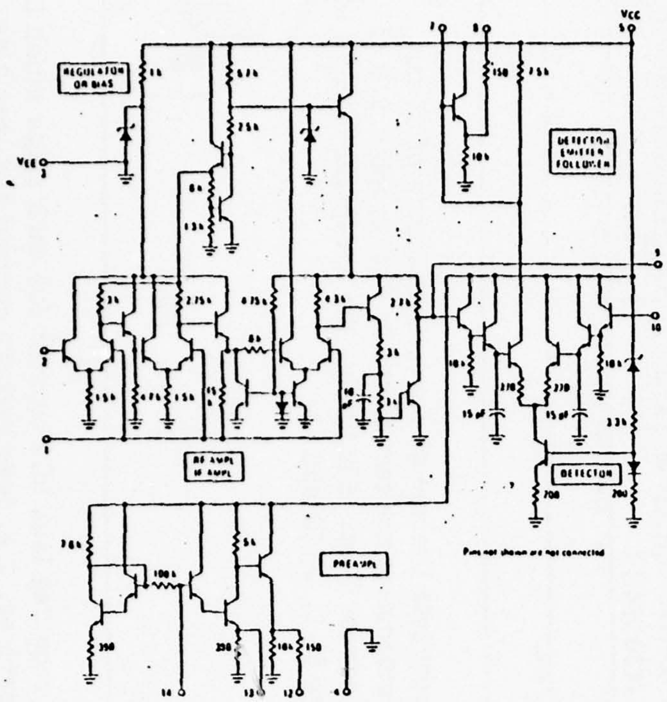
DATE

DD FORM 1 DEC 66 1694

SIZE A

Memcor RFW 1
Contract DAAB07-76-C-01?

ICIRCUIT SCHEMATIC



PRELIMINARY

E-SYSTEMS INC.
MEMCOR DIVISION
41 East Park Drive, Huntington, Indiana 46750

ITEM	REQ'D	PART NUMBER	DESCRIPTION	MAT'L	MAT'L SPEC.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	TITLE INTEGRATED CIRCUIT, LM3075.
TOLERANCES FRAC. ± DEC. ± ANGLES ±	
DR Y MIN — DATE 6-20-77	
CHK — DATE	MATERIAL — FINISH
APP — DATE	
APP — DATE	
NEXT ASSY	SCALE — SHEET NO. OF — SIZE A — RE

REVISIONS

REQUEST FOR DEVIATION/WAIVER
(SEE MIL-STD-480 OR 481 FOR INSTRUCTIONS)

DATE PREPARED: 8-11-77

PROCURING ACTIVITY NO.

File

1. ORIGINATOR NAME AND ADDRESS
E-Systems, Inc., Memcor Division
41 East Park Drive, Huntington, IN 46750

2. ☐ DEVIATION ☒ WAIVER

3. ☐ MINOR ☐ MAJOR ☐ CRITICAL

4. DESIGNATION FOR DEVIATION/WAIVER

a. MODEL/TYPE	b. MFR. CODE	c. SYS. DESIG.	d. DEV/WAIVER NO.
RT-246 RT-524 R-442	83777	AN/VRC-12	RFW 2

5. BASE LINE AFFECTED: ☐ FUNCTIONAL ☐ ALLOCATED ☐ PRODUCT

6. OTHER SYSTEMS/CONFIGURATION ITEMS AFFECTED: ☐ YES ☐ NO

7. SPECIFICATIONS AFFECTED-TEST PLAN

	MFR. CODE	SPEC./DOC. NO.	SCN
a. SYSTEM			
b. ITEM			
c. TEST PLAN			

8. DRAWINGS AFFECTED

MFR. CODE	NUMBER	REV.	NOR. NO.
80063	SC-A-400364	B	

9. TITLE OF DEVIATION/WAIVER
A-7200A Zero Signal DC-Current Test

10. CONTRACT NO. & LINE ITEM
DAAB07-76-C-013

11. CONFIGURATION ITEM NOMENCLATURE
AN/VRC-12, 43-49 Series

CLASSIFICATION OF DEFECT

12. CD NO.

13. DEFECT NO.

14. DEFECT CLASSIFICATION: ☐ MINOR ☐ MAJOR ☐ CRITICAL

15. NAME OF PART OR LOWEST ASSEMBLY AFFECTED
Test Procedure of Servo Amp.

16. PART NO. OR TYPE DESIG.
SC-A-400364B

17. LOT NO.

18. QTY

19. RECURRING DEVIATION/WAIVER: ☐ YES ☒ NO

20. EFFECT ON COST/PRICE
None

21. EFFECT ON DELIVERY SCHEDULE

22. EFFECT ON INTEGRATED LOGISTIC SUPPORT, INTERFACE, ETC.
None

23. DESCRIPTION OF DEVIATION/WAIVER

E-Systems, Inc., Memcor Division requests the use of acceptance limits of 32 mA minimum & 45 mA maximum while performing the test listed in Paragraph 8.2.3 of SC-A-400364B, the Zero Signal DC-Current Test. Similarly, the acceptance limits of Paragraph 9.1 will be changed. (Page 5, 7, 9, 11 and 13)

8/24/77

24. NEED FOR DEVIATION/WAIVER

Siliconized A-7200A Servo Amplifier requires less idle current for each stage which is an inherent characteristic of silicon devices, i.e. less leakage current and less bias branch current.

It is no longer necessary to bias such a relatively high current which will cause higher dissipation.

25. PRODUCTION EFFECTIVITY BY SERIAL NUMBER

26. SUBMITTING ACTIVITY AUTHORIZING SIGNATURE
[signature] 8-12-77

TITLE
Project Engineer/Quality

27. APPROVAL/DISAPPROVAL

a. ☐ APPROVAL RECOMMENDED

b. ☐ APPROVED ☐ DISAPPROVED

c. GOVERNMENT ACTIVITY

SIGNATURE

DATE

DD FORM 1694

REQUEST FOR DEVIATION/WAIVER
(SEE MIL-STD-480 OR 481 FOR INSTRUCTIONS)

DATE PREPARED: 8-11-77

PROCURING ACTIVITY NO.:

1. ORIGINATOR NAME AND ADDRESS
E-Systems Inc., Memcor Division
41 East Park Drive, Huntington, IN 46750

2. ☐ DEVIATION ☒ WAIVER

3. ☐ MINOR ☐ MAJOR ☐ CRITICAL

4. DESIGNATION FOR DEVIATION/WAIVER

a. MODEL/TYPE	b. MFR. CODE	c. SYS. DESIG.	d. DEV/WAIVER NO.
RT-246 RT-524 R-442	83777	AN/VRC-12	RFW 3

5. BASE LINE AFFECTED: ☐ FUNCTIONAL ☐ ALLOCATED ☐ PRODUCT

6. OTHER SYSTEMS/CONFIGURATION ITEMS AFFECTED: ☐ YES ☐ NO

7. SPECIFICATIONS AFFECTED-TEST PLAN

	MFR. CODE	SPEC./DOC. NO.	SCN
a. SYSTEM			
b. ITEM			
c. TEST PLAN			

8. DRAWINGS AFFECTED

MFR. CODE	NUMBER	REV.	NOR. NO.
80063	SC-A-400346	B	

9. TITLE OF DEVIATION/WAIVER
A-4200A Gain, Frequency and Discriminator Test

10. CONTRACT NO. & LINE ITEM
DAAB07-76-C-0135

11. CONFIGURATION ITEM NOMENCLATURE
AN/VRC-12, 43-49 Series

CLASSIFICATION OF DEFECT

12. CD NO.:
13. DEFECT NO.:
14. DEFECT CLASSIFICATION: ☐ MINOR ☐ MAJOR ☐ CRITICAL

15. NAME OF PART OR LOWEST ASSEMBLY AFFECTED
Test Procedure of A4200

16. PART NO. OR TYPE DESIG.
SC-A-400346B

17. LOT NO.:
18. QTY:
19. RECURRING DEVIATION/WAIVER: ☐ YES ☐ NO

20. EFFECT ON COST/PRICE
None

21. EFFECT ON DELIVERY SCHEDULE

22. EFFECT ON INTEGRATED LOGISTIC SUPPORT, INTERFACE, ETC.
None

23. DESCRIPTION OF DEVIATION/WAIVER

E-Systems Inc., Memcor Division requests the use of the reference level of 0.8 mV while performing the gain test, listed in Paragraph 8.2.7 of SC-A-400364B, and to delete the tests on frequency reponse and the discriminator characteristic. (Paragraph 8.2.7 thru 8.2.15 and 8.4)

Similarly the acceptance limits of 9.1 gain characteristic, 9.2 frequency response and 9.3 discriminator will be affected. (Page 8, 9, 10, 11 and 12)

24. NEED FOR DEVIATION/WAIVER

An integrated circuit, LM3075, has been incorporated on A-4200A IF Amplifier, Limiter & Detector Module. Since the signal is being processed in inside of IC amplifier stages, above mentioned tests are no longer applicable to evaluate the above functions of the module.

The gain test with a different level and the distortion test are sufficient to check the overall module performance.

25. PRODUCTION EFFECTIVITY BY SERIAL NUMBER

26. SUBMITTING ACTIVITY AUTHORIZING SIGNATURE
Nancy Ditton 8-12-77

TITLE
Project Engineer/Quality

27. APPROVAL/DISAPPROVAL

a. ☐ APPROVAL RECOMMENDED

b. ☐ APPROVED ☐ DISAPPROVED

c. GOVERNMENT ACTIVITY | SIGNATURE | DATE

DD FORM 1 DEC 68 1694

/

REQUEST FOR DEVIATION/WAIVER
(SEE MIL-STD-480 OR 481 FOR INSTRUCTIONS)

DATE PREPARED: 8-11-77

PROCURING ACTIVITY NO.

1. ORIGINATOR NAME AND ADDRESS
E-SYSTEMS INC., MEMCOR DIVISION
41 EAST PARK DRIVE, HUNTINGTON, IN 46750

2. [ ] DEVIATION [X] WAIVER

3. [X] MINOR [ ] MAJOR [ ] CRITICAL

4. DESIGNATION FOR DEVIATION/WAIVER

a. MODEL/TYPE	b. MFR. CODE	c. SYS. DESIG.	d. DEV/WAIVER NO.
	83777		RFW 4

5. BASE LINE AFFECTED: [ ] FUNCTIONAL [ ] ALLOCATED [X] PRODUCT

6. OTHER SYSTEMS/CONFIGURATION ITEMS AFFECTED: [ ] YES [X] NO

7. SPECIFICATIONS AFFECTED-TEST PLAN

	MFR. CODE	SPEC./DOC. NO.	SCN
a. SYSTEM			
b. ITEM		N/A	
c. TEST PLAN			

8. DRAWINGS AFFECTED

MFR. CODE	NUMBER	REV.	NOR. NO.
80063	SC-A-400348	A	

9. TITLE OF DEVIATION/WAIVER
Test Procedure for Testing the CRS Balanced Mixer, Part of AN/VRC-12

10. CONTRACT NO. & LINE ITEM
DAAB07-76-C-0135

11. CONFIGURATION ITEM NOMENCLATURE
Radio Set AN/VRC-12: RT246, RT442, RT524

CLASSIFICATION OF DEFECT

12. CD NO.: N/A

13. DEFECT NO.: N/A

14. DEFECT CLASSIFICATION: [X] MINOR [ ] MAJOR [ ] CRITICAL

15. NAME OF PART OR LOWEST ASSEMBLY AFFECTED
Balanced Mixer Assembly

16. PART NO. OR TYPE DESIG.
SM-B-413592

17. LOT NO.: All

18. QTY: All

19. RECURRING DEVIATION/WAIVER: [ ] YES [X] NO

20. EFFECT ON COST/PRICE

21. EFFECT ON DELIVERY SCHEDULE
None

22. EFFECT ON INTEGRATED LOGISTIC SUPPORT, INTERFACE, ETC.
None

23. DESCRIPTION OF DEVIATION/WAIVER

See Attachment "A"

24. NEED FOR DEVIATION/WAIVER

The 5 MHz Oscillator is no longer required for testing the A3200A module. The Low Level (50 mV) of the single frequency oscillator is inadequate for switching the A3200A transistor bridge. Instead, the Harmonic Oscillator output should be used. A closer simulation to the actual radio conditions is maintained.

25. PRODUCTION EFFECTIVITY BY SERIAL NUMBER

26. SUBMITTING ACTIVITY AUTHORIZING SIGNATURE
George D. Staton 8-12-77

TITLE
Project Engineer/Quality

27. APPROVAL/DISAPPROVAL

a. [ ] APPROVAL RECOMMENDED

b. [ ] APPROVED [ ] DISAPPROVED

c. GOVERNMENT ACTIVITY

SIGNATURE

DATE

DD FORM 1 DEC 68 1694

MEMCOR RFW 4
CONTRACT DAAB07-76-C-0135
ATTACHMENT "A"
AUGUST 11, 1977

The test procedure changes as follows:

On Sheet 4 of 19, Paragraph 8.1.3 has been changed to read:

"8.1.3. Set the Function switch to 5 MC Osc. (Set the Function swit switch to Hor. Osc. position for the A3200A standard reference)."

On Sheet 5 of 19, add to Paragraph 8.2.6:

"Note: At 53 MC, only, the Function switch must be set to the 5 MC Osc. position. (When testing the A3200A module, the Function switch remains at the Hor. Osc. position)."

On Sheet 5 of 19, Paragraph 8.3.2 has been changed to read:

"8.3.2. Set the Function switch to the 5 MC Osc. position. (For the A3200A module set the Function switch to the Hor. Osc. position)."

8-11-77

1. ORIGINATOR NAME AND ADDRESS
E-SYSTEMS INC., MEMCOR DIVISION
41 EAST PARK DR. HUNTINGTON, IN 46750

2. [ ] DEVIATION [X] WAIVER

3. [ ] MINOR [ ] MAJOR [ ] CRITICAL

4. DESIGNATION FOR DEVIATION/WAIVER				5. BASE LINE AFFECTED			6. OTHER SYSTEMS/CONFIGURATION ITEMS AFFECTED	
a. MODEL/TYPE	b. MFR. CODE	c. SYS. DESIG.	d. DEV/WAIVER NO.	[ ] FUNCTIONAL	[ ] ALLOCATED	[ ] PRODUCT	[ ] YES	[ ] NO
	83777		RFW 5					

	7. SPECIFICATIONS AFFECTED-TEST PLAN			8. DRAWINGS AFFECTED			
	MFR. CODE	SPEC./DOC. NO.	SCN	MFR. CODE	NUMBER	REV.	NOR. NO.
a. SYSTEM							
b. ITEM				80063	SC-A-400357	A	
c. TEST PLAN							

9. TITLE OF DEVIATION/WAIVER
A4300A Gain Test Limits

10. CONTRACT NO. & LINE ITEM
DAAB07-76-C-0135

11. CONFIGURATION ITEM NOMENCLATURE
Radio Set AN/VRC-12 R442, RT524, RT246

CLASSIFICATION OF DEFECT

12. CD NO.	13. DEFECT NO.	14. DEFECT CLASSIFICATION
N/A	N/A	[X] MINOR [ ] MAJOR [ ] CRITICAL

15. NAME OF PART OR LOWEST ASSEMBLY AFFECTED	16. PART NO. OR TYPE DESIG.	17. LOT NO.	18. QTY	19. RECURRING DEVIATION/WAIVER
Test Procedure for Testing Audio & Squelch Preamplifier	SC-A-400357	All	All	[ ] YES [X] NO

20. EFFECT ON COST/PRICE
Cost Incurred Absorbed by Contractor

21. EFFECT ON DELIVERY SCHEDULE
Approval Necessary to Meet Delivery Schedule

22. EFFECT ON INTEGRATED LOGISTIC SUPPORT, INTERFACE, ETC.
None

23. DESCRIPTION OF DEVIATION/WAIVER
E-Systems Inc., Memcor Div. proposes to change the gain test limit requirements of the Audio and Squelch Preamplifier (A4300A) to "between 0.10 and 0.42 volts" in lieu of the present limit of "between 0.20 and 0.42 volts" on the SC-A-400347A drawing. The requirement is called out 37 places on the SC-A-400347A as follows: Para 6.2 Page 3, Para 8.2.2 Page 4, Para. 9.0 Pages 5,6,7,8, and 9.

24. NEED FOR DEVIATION/WAIVER

See Attachment "A"

25. PRODUCTION EFFECTIVITY BY SERIAL NUMBER

26. SUBMITTING ACTIVITY/AUTHORIZING SIGNATURE
[signature] 8-12-77

TITLE
Project Engineer/Quality

27. APPROVAL/DISAPPROVAL

a. [ ] APPROVAL RECOMMENDED

b. [ ] APPROVED [ ] DISAPPROVED

c. GOVERNMENT ACTIVITY

SIGNATURE

DATE

DD FORM 1 DEC 68 1694

MEMCOR RFW 5
CONTRACT DAAB07-76-C-0135
ATTACHMENT "A"
AUGUST 11, 1977

The radio system test (MIL-R-55099 & MIL-R-55100EL) call for the modules to be tested after the modules are adjusted in the radio (interchangeability, Group B). The module test limits were set up on modules prior to adjusting in the radio. Since the A4300 module has a very wide gain adjustment and the gain must be adjusted in the radio to compensate for the variations of audio output of the A4200 modules, the proposed change in limits are necessary so that the A4300's may be re-inserted into the radio (without readjustment) to continue the Group C Radio Tests.

The new IC A4200A modules have less audio output, therefore the A4300 must be adjusted for more gain (less input for 2.0V output) for functional operation in the radio. The data below was taken on six radios with the A4300 modules adjusted as noted in the radio for .78V = 0.5dB output in X-mode which is necessary to meet the radio wideband specification paragraph 3.9.1.5 of MIL-R-55100 (EL).

	Preamp Gain Input for 2.0V out	
	Silicon A4300A adj. for A4200A	Germanium A4300 adj. for A4200
Radio No.	VRMs	VRMs
1605	.162	.20
3829	.168	.37
18783	.163	.29
18790	.168	.29
19087	.167	.28
18785	.185	.34

REQUEST FOR DEVIATION/WAIVER
(SEE MIL-STD-480 OR 481 FOR INSTRUCTIONS)

DATE PREPARED: 8-12-77

PROCURING ACTIVITY NO.:

1. ORIGINATOR NAME AND ADDRESS
E-SYSTEMS INC., MEMCOR DIVISION
41 EAST PARK DRIVE, HUNTINGTON, IN 46750

2. ☐ DEVIATION ☒ WAIVER
3. ☐ MINOR ☐ MAJOR ☐ CRITICAL

4. DESIGNATION FOR DEVIATION/WAIVER

a. MODEL/TYPE	b. MFR. CODE	c. SYS. DESIG.	d. DEV/WAIVER NO.
	83777		RFW 6

5. BASE LINE AFFECTED: ☐ FUNCTIONAL ☐ ALLOCATED ☐ PRODUCT

6. OTHER SYSTEMS/CONFIGURATION ITEMS AFFECTED: ☐ YES ☐ NO

7. SPECIFICATIONS AFFECTED-TEST PLAN

	MFR. CODE	SPEC./DOC. NO.	SCN
a. SYSTEM			
b. ITEM			
c. TEST PLAN			

8. DRAWINGS AFFECTED

MFR. CODE	NUMBER	REV.	NOR. NO.
80063	SC-A-400360	B	

9. TITLE OF DEVIATION/WAIVER
A8500A Test Procedure Limits

10. CONTRACT NO. & LINE ITEM
DAAB07-76-C-0135

11. CONFIGURATION ITEM NOMENCLATURE
Radio Set AN/VRC-12 RT524, RT246

CLASSIFICATION OF DEFECT
12. CD NO.: N/A
13. DEFECT NO.: N/A
14. DEFECT CLASSIFICATION: ☒ MINOR ☐ MAJOR ☐ CRITICAL

15. NAME OF PART OR LOWEST ASSEMBLY AFFECTED
Test Procedure for Testing Transmitter Speech Amplifier

16. PART NO. OR TYPE DESIG.
SC-A-400360

17. LOT NO.: All
18. QTY: All
19. RECURRING DEVIATION/WAIVER: ☐ YES ☒ NO

20. EFFECT ON COST/PRICE
Cost Incurred Absorbed by Contractor

21. EFFECT ON DELIVERY SCHEDULE
Approval necessary to meet delivery schedule

22. EFFECT ON INTEGRATED LOGISTIC SUPPORT, INTERFACE, ETC.
None

23. DESCRIPTION OF DEVIATION/WAIVER

E-Systems Inc., Memcor Division proposed to change the acceptance test limit requirements of the Transmitter Speech Amplifier to "27mV minimum to 43mV maximum" in lieu of "31mV minimum to 41mV maximum" on the SC-A-400360 drawing. The limit requirements appear in the following paragraphs and pages of the SC-A-400360 drawing: Paragraph 8.2.5, Page 5; Paragraph 9.1, Pages 7,9,11,13, and 15.

24. NEED FOR DEVIATION/WAIVER

The radio system test (MIL-R-55099EL & MIL-R-55100EL) call for the modules to be tested after the modules are adjusted in the radio (Interchangeability, Group B). The module test limits were set up on modules adjusted prior to adjustments in the radio.

The A8500 module must be readjusted for 8kc deviation in the radio to allow for variations in the deviation sensitivity of the system test (primarily the sensitivity of CR8102 & CR8103 and CR6301 & CR5302).

25. PRODUCTION EFFECTIVITY BY SERIAL NUMBER
All

26. SUBMITTING ACTIVITY AUTHORIZING SIGNATURE
George Dittmer 8-15-77

TITLE
Project Engineer/Quality

27. APPROVAL/DISAPPROVAL

a. ☐ APPROVAL RECOMMENDED

b. ☐ APPROVED ☐ DISAPPROVED

c. GOVERNMENT ACTIVITY

SIGNATURE

DATE

DD FORM DEC 68 1594

REQUEST FOR DEVIATION/WAIVER
(SEE MIL-STD-480 OR 481 FOR INSTRUCTIONS)

DATE PREPARED: 8-16-77

PROCURING ACTIVITY NO.:

1. ORIGINATOR NAME AND ADDRESS
E-SYSTEMS INC., MEMCOR DIVISION
41 EAST PARK DRIVE, HUNTINGTON, IN 46750

2. ☐ DEVIATION ☒ WAIVER
3. ☐ MINOR ☐ MAJOR ☐ CRITICAL

4. DESIGNATION FOR DEVIATION/WAIVER

a. MODEL/TYPE	b. MFR. CODE	c. SYS. DESIG.	d. DEV/WAIVER NO.
	83777		RFW 7

5. BASE LINE AFFECTED: ☐ FUNCTIONAL ☐ ALLOCATED ☐ PRODUCT

6. OTHER SYSTEMS/CONFIGURATION ITEMS AFFECTED: ☐ YES ☐ NO

7. SPECIFICATIONS AFFECTED-TEST PLAN

	MFR. CODE	SPEC./DOC. NO.	SCN
a. SYSTEM			
b. ITEM			
c. TEST PLAN			

8. DRAWINGS AFFECTED

MFR. CODE	NUMBER	REV.	NOR. NO.
80063	SC-A-400362	A	

9. TITLE OF DEVIATION/WAIVER
Waiver of 20kc Frequency Response of A8100A 11.5MC Modulator

10. CONTRACT NO. & LINE ITEM
DAAB07-76-C-0135

11. CONFIGURATION ITEM NOMENCLATURE
Radio Set AN/VRC-12 RT524, RT246

CLASSIFICATION OF DEFECT
12. CD NO.: N/A
13. DEFECT NO.: N/A
14. DEFECT CLASSIFICATION: ☐ MINOR ☐ MAJOR ☐ CRITICAL

15. NAME OF PART OR LOWEST ASSEMBLY AFFECTED
Test Procedure for Testing the 11.5MHz Modulator

16. PART NO. OR TYPE DESIG.
SC-A-400362

17. LOT NO.: All
18. QTY: All
19. RECURRING DEVIATION/WAIVER: ☐ YES ☒ NO

20. EFFECT ON COST/PRICE
Cost Incurred Absorbed by the Contractor

21. EFFECT ON DELIVERY SCHEDULE
Contingent upon approval of this RFW

22. EFFECT ON INTEGRATED LOGISTIC SUPPORT, INTERFACE, ETC.
None

23. DESCRIPTION OF DEVIATION/WAIVER

E-Systems Inc., Memcor Division proposes to allow a-1.6kc maximum change in deviation for the 20kc modulation test frequency in lieu of a minus 0.75k maximum variation for 20kc modulation. The-0.75 maximum variation test limit is specified in paragraph 8.3.13 via paragraph 8.3.14 for 20kc modulation, page 6, and listed via "D2" in paragraph 9.0 pages 7, 8, 9, 10, and 11 of SC-A-400362.

24. NEED FOR DEVIATION/WAIVER

The frequency response at 20kc modulation drops much more than the -0.75kc variation allowed in the 11.5MHz modules which was redesigned to incorporate the modulation phase invertion and silicon transistors (see data sheet attachment A). The frequency response at 20kc modulation increases in the system radio test when using the present germanium A8100 11.5MHz modulator. The rise in the system frequency response at 20kc tends to off set the fall in the 20kc response of the silicon A8100A module, hence the overall system frequency response is well within the 3.0dB variation limit of the MIL-R-55100(EL) paragraph 3.10.15.2 system test (see attachment B).

25. PRODUCTION EFFECTIVITY BY SERIAL NUMBER
All

26. SUBMITTING ACTIVITY AUTHORIZING SIGNATURE
George Dutton 8-17-77

TITLE
Project Engineer

27. APPROVAL/DISAPPROVAL
a. ☐ APPROVAL RECOMMENDED
b. ☐ APPROVED ☐ DISAPPROVED
c. GOVERNMENT ACTIVITY
SIGNATURE
DATE

DD FORM 1694

A8100A 11.5MHz MODULE FREQUENCY RESPONSE
Tested on Gov. Gage NR 323854-1 per SC-A-400362A

A8100A Modules from Radio S/N	Frequency Response (kc) With 36mv Input Modulation Frequency (cps) 500	1k	3k	10k	20k	20k Δ (kc)
19087	8.75	8.70	8.8	8.6	8.0	-0.7
18790	9.4	9.4	9.3	9.0	8.2	-1.2
18793	8.7	8.7	8.7	8.3	7.8	-0.9
18785	9.3	9.4	9.3	9.15	8.4	-1.0
1605	9.4	9.4	9.3	9.1	8.2	-1.2
18787	9.3	9.3	9.2	9.0	8.3	-1.0

XMTR AUDIO RESPONSE - WIDEBAND SYSTEM TEST
Per Para. 3.10.15.2 of MIL-R-55100D(EL)

Using A8100A with Silicon Transistor and Phase Inverted

Modulation Frequency (cps)
Modulation Frequency (cps)

Radio S/N	Dial Test Frequency	500	1k	5k	10k	20k	Δ dB
19087	30.00	9.3	9.2	9.6	9.7	11.7	2.1
	54.00	9.1	9.0	9.2	9.6	9.2	0.6
18790	30.00	8.75	8.7	9.0	9.2	11.2	2.2
	54.00	8.5	8.5	8.7	9.0	8.8	0.5
18793	30.00	8.6	8.5	8.6	8.8	10.4	1.7
	54.00	8.2	8.2	8.2	8.6	8.2	0.4
18785	30.00	9.2	9.2	9.4	9.8	11.4	1.8
	54.00	9.2	9.1	9.3	9.4	9.0	0.4
1605	30.00	8.6	8.6	8.6	8.9	10.5	1.7
	54.00	8.3	8.3	8.5	8.7	8.3	0.4
18787	30.00	8.8	8.8	8.8	9.4	10.7	1.7
	54.00	8.7	8.7	8.8	8.9	8.4	0.5

Using Germanium A8100 (original module of GFE radio)

18787	30.00	9.6	9.6	9.6	10.2	13.0	2.6
	54.00	9.25	9.2	9.4	9.8	9.8	0.6

ENGINEERING CHANGE PROPOSAL (SHORT FORM)
(SEE MIL-STD-481 FOR INSTRUCTIONS)

DATE PREPARED	ECP NO.	PROCURING ACTIVITY NO.
8-15-77	Memcor ECP 16	

1. ORIGINATOR NAME AND ADDRESS	2. MFR. CODE	3. CLASS OF ECP	4. JUST. CODE	5. PRIORITY
E-SYSTEMS INC., MEMCOR DIVISION 41 EAST PARK DRIVE, HUNTINGTON, IN 46750	83777			

6. SPECIFICATIONS AFFECTED		7. DRAWINGS AFFECTED		
MFR. CODE	SPECIFICATION/DOCUMENT NO.	MFR. CODE	NUMBER	REV.
	N/A	80063	SC-A-400693	C

8. TITLE OF CHANGE	9. CONTRACT NO. & LINE ITEM
A150CA- Government Gage Test Procedure Change	DAAB07-76-C-0135

10. CONFIGURATION ITEM NOMENCLATURE	11. IN PRODUCTION
Radio Set AN/VRC-12 RT246, RT524, and R442	[X] YES [ ] NO

12. NAME OF PART OR LOWEST ASSEMBLY AFFECTED	13. PART NO. OR TYPE DESIGNATION
Tuner Oscillator Board Assembly	374989-D

14. DESCRIPTION OF CHANGE

E-Systems Inc., Memcor Division hereby requests the approval to change the minimum acceptance limits of SC-A-400693, Step 9.4.1 as follows:

@ 41.500 MHz - change the minimum acceptance limit for the 1.4V setting from 60 to 57

- change the minimum acceptance limit for the 1.6V setting from 60 to 55.

15. NEED FOR CHANGE

See Attachment "A"

16. EFFECT ON ASSOCIATED EQUIPMENT

None

17. PRODUCTION EFFECTIVITY BY SERIAL NO.	18. EFFECT ON PRODUCTION DELIVERY SCHEDULE
	N/A
19. RECOMMENDED RETROFIT EFFECTIVITY	**20. ESTIMATED KIT DELIVERY SCHEDULE**
None	N/A

21. ESTIMATED COSTS/SAVINGS

22. SUBMITTING ACTIVITY AUTHORIZING SIGNATURE	TITLE
George Dutton 8-15-77	Project Engineer/Quality

23. APPROVAL/DISAPPROVAL

GOVERNMENT ACTIVITY	SIGNATURE	DATE

DD FORM DEC 66 1693

GPO : 1969 O—338-094

MEMCOR ECP 16
CONTRACT DAAB07-76-C-0135
ATTACHMENT "A"
Sheet 1 of 1

Need For Change (Block 15)

Memcor is unable to consistently obtain a minimum frequency shift of 60kHz, with a frequency shift setting of 1.4V and 1.6V, when testing the A1500A module @ 41.500MHz on the Government Gage Test fixture.

Circuit changes to bring these readings within the present requirements, would cause the 64.410MHz (+) frequency shift requirements to be out of tolerance, thereby necessitating degradation of the tracking alignment of the module; or, a tolerance change for the (+) frequency shift requirements @ 64.410MHz.

Allowing these two (2) limit changes will not affect the overall performance of the module, and the radio will still meet the minimum sensitivity requirement of 450kHz when 1.5 VDC is applied to the frequency shift circuit.

NOTICE OF REVISION (NOR)
(SEE MIL-STD-480 FOR INSTRUCTIONS)
This revision described below has been authorized for the document listed.

1. ORIGINATOR NAME AND ADDRESS	DATE	MFR. CODE	NOR. NO.
E-SYSTEMS INC., MEMCOR DIVISION 41 EAST PARK DRIVE, HUNTINGTON, IN 46750	8-15-77	83777	105

2. TITLE OF DOCUMENT	3. MFR. CODE	4. DOCUMENT NUMBER	
Test Procedure - Government Gage T.F.	80063	SC-A-400693	
	5. REVISION LETTER (CURRENT) C	(NEW) N/A	6. ECP NO. ECP 16

7. CONFIGURATION ITEM (OR SYSTEM) TO WHICH ECP APPLIES

Radio Set AN/VRC-12

8. DESCRIPTION OF REVISION

Change the minimum acceptance limits of step 9.4.1 as follows:

Freq. Shift Setting	Acceptance Limits Minimum	Maximum
1.4	57	120
1.6	55	120

9. THIS SECTION FOR GOVERNMENT USE ONLY

A. CHECK ONE

☐ EXISTING DOCUMENT SUPPLEMENTED BY THIS NOR MAY BE USED IN MANUFACTURE.

☐ REVISED DOCUMENT MUST BE RECEIVED BEFORE MANUFACTURER MAY INCORPORATE THIS CHANGE.

☐ CUSTODIAN OF MASTER DOCUMENT SHALL MAKE ABOVE REVISION AND FURNISH REVISED DOCUMENT TO:

B. ACTIVITY AUTHORIZED TO APPROVE CHANGE FOR GOVERNMENT	SIGNATURE AND TITLE	DATE
10. ACTIVITY ACCOMPLISHING REVISION	REVISION COMPLETED (SIGNATURE)	DATE

DD FORM 1 DEC 68 1695

U.S. GOVERNMENT PRINTING OFFICE : 1969 O - 333-008

Gov't Gage

MEMCOR ECP 16
CONTRACT DAAB07-76-C-0135

A1500A

LOT NO.	TEST FREQ.	OUTPUT VOLTAGE (MV)		TUNER FREQ. CONT.		CRS OUTPUT (MV)
		MIN	MAX	MIN	MAX	MIN
SAMPLE NO.	41.50 MHz	80	270	987	013	280
	53.50 MHz	80	270	207	233	280
36	64.41 MHz	80	270	407	433	280
	41.50	170		000		450
	53.50	155		224		530
	64.41	120		431		520

FREQ. SHIFT SETTING	LIMITS (KC)		FREQUENCY SHIFT SENSITIVITY 41.50 MHz		53.50 MHz		64.41 MHz	
	MIN	MAX	(-)	(+)	(-)	(+)	(-)	(+)
0	60	120						
.2	60	120	73	76	80	84	92	95
.4	60	120	71	79	78	86	89	100
.6	60	120	68	83	74	91	86	102
.8	60	120	65	86	73	94	83	107
1.0	60	120	64	90	70	98	80	112
1.2	60	120	61	94	67	103	78	117
1.4	60	120	60	100	66	108	76	123
1.6	60	120	58	105	64	114	74	128

GOV'T GAGE

MEMCOR ECP 16
CONTRACT DAAB07-76-C-0135

A1500 A

LOT NO.	TEST FREQ.	OUTPUT VOLTAGE (MV)		TUNER FREQ. CONT.		CRS OUTPUT (MV)
		MIN	MAX	MIN	MAX	MIN
SAMPLE NO.	41.50 MHz	80	270	987	013	230
	53.50 MHz	80	270	207	233	280
	64.41 MHz	80	270	407	433	280
46						
	41.50	160		002		490
	53.50	160		225		570
	64.41	115		431		550

FREQ. SHIFT SETTING	LIMITS (KC)		FREQUENCY SHIFT SENSITIVITY 41.50 MHz		53.50 MHz		64.41 MHz	
	MIN	MAX	(-)	(+)	(-)	(+)	(-)	(+)
0	60	120						
.2	60	120	78	81	84	88	97	100
.4	60	120	75	84	82	92	93	104
.6	60	120	72	87	79	95	91	108
.8	60	120	70	91	76	99	87	112
1.0	60	120	67	96	74	103	84	117
1.2	60	120	65	100	72	108	83	122
1.4	60	120	64	105	70	114	80	128
1.6	60	120	61	111	68	119	77	134

GOV'T GAGE

MEMCOR ECP 16
CONTRACT DAAB07-76-C-0135

A1500A

LOT NO.	TEST FREQ.	OUTPUT VOLTAGE (MV)		TUNER FREQ. CONT.		CRS OUTPUT (MV)
		MIN	MAX	MIN	MAX	MIN
SAMPLE NO.	41.50 MHz	80	270	987	013	280
	53.50 MHz	80	270	207	233	280
48	64.41 MHz	80	270	407	433	280
	41.50	150		000		460
	53.50	150		223		530
	64.41	110		431		510

FREQ. SHIFT SETTING	LIMITS (KC)		FREQUENCY SHIFT SENSITIVITY 41.50 MHz		53.50 MHz		64.41 MHz	
	MIN	MAX	(-)	(+)	(-)	(+)	(-)	(+)
0	60	120						
.2	60	120	77	80	85	89	97	101
.4	60	120	74	83	82	91	94	104
.6	60	120	72	86	80	95	91	108
.8	60	120	70	89	76	99	88	112
1.0	60	120	67	93	75	103	86	117
1.2	60	120	65	98	72	107	83	122
1.4	60	120	64	102	71	113	81	127
1.6	60	120	62	108	68	118	78	124

NOTE: STANDARD MODULE PERFORMANCE OF PAGES 22 THROUGH 26 IS APPLICABLE WHEN USING FIXTURE NO. 323859-3.

8.2.32 Set the test fixture set FREQ SHIFT POLARITY switch in the plus (+) position.

8.2.33 Repeat steps 8.2.29, 8.2.30 and 8.2.31. The subtraction order will be reversed and the frequency shifts will be decreasing.

8.3 TEST COMPLETION

8.3.1 Set the test fixture set TEST switch in OFF position.

8.3.2 Remove the Tuner Oscillator board from the test fixture set.

8.3.3 Disconnect connector P1004 form connector J1004.

9.0 ACCEPTANCE LIMITS AND CONTROL STANDARD PERFORMANCE

9.1 OUTPUT VOLTAGE

VOLTAGE (MV)

FREQUENCY SETTING (MC)	ACCEPTANCE LIMITS MINIMUM	MAXIMUM	CONTROL STANDARDS NR.1	NR. 2
41.500	80	270	125	115
53.500	80	270	210	170
64.410	80	270	130	110

9.2 OUTPUT FREQUENCY

FREQUENCY SETTING (MC)	ACCEPTANCE LIMITS TUNER FREQUENCY CONTROL MINIMUM	MAXIMUM	CONTROL STANDARDS NR.1	NR.2
41.500	987	013	000	000
53.500	207	233	222	222
64.410	407	433	420	420

9.3 CRS OUTPUT

TUNER FREQUENCY SETTING (MC)	CRS OUTPUT VOLTAGE (MV)		
	ACCEPTANCE LIMIT MINIMUM	CONTROL STANDARDS NR.1	NR.2
41.500	280	520	480
53.500	280	600	560
64.410	280	640	590

9.4 SHIFT SENSITIVITY, 41.500 MC

9.4.1 FREQ SHIFT POLARITY(+) POSITION, 41.500 MC

FREQ SHIFT SETTING	FREQUENCY SHIFT, INCREASE (KC)			
	ACCEPTANCE LIMITS MINIMUM	MAXIMUM	CONTROL STANDARDS NR.1	NR.2
0	-	-	---	---
.2	60	120	84	87
.4	60	120	82	83
.6	60	120	80	81
.8	60	120	77	77
1.0	60	120	74	76
1.2	60	120	73	73
1.4	57 ~~60~~	120	TEST LIMIT	TEST LIMIT
1.6	55 ~~60~~	120	---	----

UPPER TEST LIMIT: 41.975 MC

9.4.2 FREQ SHIFT POLARITY (+) POSITION, 41.500 MC

FREQUENCY SHIFT, DECREASE (KC)

FREQ SHIFT SETTING	ACCEPTANCE LIMITS MINIMUM	ACCEPTANCE LIMITS MAXIMUM	CONTROL STANDARDS NR.1	CONTROL STANDARDS NR.2
0	-	-	---	---
.2	60	120	90	90
.4	60	120	92	94
.6	60	120	96	98
.8	60	126	99	102
1.0	60	126	104	107
1.2	60	126	110	112
1.4	60	126	TEST LIMIT	TEST LIMIT
1.6	60	126	---	---

LOWER TEST LIMIT: 41.025 MC

9.5 SHIFT SENSITIVITY, 53.500 MC

9.5.1 FREQ SHIFT POLARITY (-) POSITION, 53.500 MC

FREQUENCY SHIFT, INCREASE (KC)

FREQ SHIFT SETTING	ACCEPTANCE LIMITS MINIMUM	ACCEPTANCE LIMITS MAXIMUM	CONTROL STANDARDS NR.1	CONTROL STANDARDS NR.2
0	-	-	---	---
.2	60	120	92	93
.4	60	120	89	88
.6	60	120	85	86
.8	60	120	83	84
1.0	60	120	81	80
1.2	60	120	78	79
1.4	60	120	TEST LIMIT	TEST LIMIT
1.6	60	120	---	---

UPPER TEST LIMIT: 53.975 MC

9.5.2 FREQ SHIFT POLARITY (+) POSITION, 53.500 MC

FREQUENCY SHIFT, DECREASE (KC)

FREQ SHIFT SETTING	ACCEPTANCE LIMITS MINIMUM	MAXIMUM	CONTROL STANDARDS NR.1	NR.2
0	-	-	---	---
.2	60	120	95	95
.4	60	120	99	99
.6	60	120	102	102
.8	60	126	106	107
1.0	60	126	111	111
1.2	60	126	116	116
1.4	60	126	TEST LIMIT	TEST LIMIT
1.6	60	126	---	---

LOWER TEST LIMIT: 53.025MC

9.6 SHIFT SENSITIVITY, 64.410 MC

9.6.1 FREQ SHIFT POLARITY (-)POSITION, 64.410 MC

FREQUENCY SHIFT, INCREASE (KC)

FREQ SHIFT SETTING	ACCEPTANCE LIMITS MINIMUM	MAXIMUM	CONTROL STANDARDS NR.1	NR.2
0	-	-	-----	-----
.2	60	120	101	103
.4	60	120	99	100
.6	60	120	96	97
.8	60	120	93	96
1.0	60	120	91	91
1.2	60	120	88	89
1.4	60	120	TEST LIMIT	TEST LIMIT
1.6	60	120	-----	----

UPPER TEST LIMIT: 64.885MC

9.6.2 FREQ SHIFT POLARITY (+) POSITION, 64.410 MC

FREQUENCY SHIFT, DECREASE (KC)

FREQ SHIFT SETTING	ACCEPTANCE LIMITS MINIMUM	MAXIMUM	CONTROL STANDARDS NR.1	NR.2
0	--	--	---	---
.2	60	120	107	107
.4	60	120	110	110
.6	60	120	114	114
.8	60	126	117	118
1.0	60	126	122	123
1.2	60	126	TEST LIMIT	TEST LIMIT
1.4	60	126	---	----
1.6	60	126	---	----

LOWER TEST LIMIT: 63.935 MC

10.0 CALIBRATION INSTRUCTIONS FOR TEST FIXTURE SET

10.1 Check the test fixture set using the Tuner Oscillator board nominal control standard modules furnished with the test fixture set. Test according to paragraphs 8.1 to 8.2. Perform step 10.2 if required.

10.2 CALIBRATION

10.2.1 Connect Hewlett-Packard Model 413-A Multimeter or equivalent, to TP1.

10.2.2 Set the test fixture set TEST switch in ON position

10.2.3 Set the test fixture set FREQ SHIFT POLARITY switch in the plus (+) position and rotate the FREQ SHIFT switch to the 1.6 position.

10.2.4 Adjust the test fixture set CONTROL VOLTAGE potentionmeter for an indication of +1.60 volts on the multimeter.

10.2.5 Set the test fixture set TEST switch in OFF position.

ENGINEERING CHANGE PROPOSAL (SHORT FORM)
(SEE MIL-STD-481 FOR INSTRUCTIONS)

DATE PREPARED	ECP NO.	PROCURING ACTIVITY NO.
8-15-77	Memcor ECP 17	

1. ORIGINATOR NAME AND ADDRESS	2. MFR. CODE	3. CLASS OF ECP	4. JUST. CODE	5. PRIORITY
E-SYSTEMS INC., MEMCOR DIVISION 41 EAST PARK DRIVE, HUNTINGTON, IN 46750	83777			

6. SPECIFICATIONS AFFECTED		7. DRAWINGS AFFECTED		
MFR. CODE	SPECIFICATION/DOCUMENT NO.	MFR. CODE	NUMBER	REV.
	N/A	80063	SC-A-400368	A

8. TITLE OF CHANGE	9. CONTRACT NO. & LINE ITEM
A6300A - Government Gage Test Procedure Change	DAAB07-76-C-0135

10. CONFIGURATION ITEM NOMENCLATURE	11. IN PRODUCTION
Radio Set AN/VRC-12 RT246 and RT524	[X] YES [ ] NO

12. NAME OF PART OR LOWEST ASSEMBLY AFFECTED	13. PART NO. OR TYPE DESIGNATION
Oscillator - Buffer, Oscillator Board	374993

14. DESCRIPTION OF CHANGE

E-Systems Inc., Memcor Division hereby requests the approval to change the minimum acceptance limits of SC-A-400368 step 9.3.1 as follows:

@ 30.000MHz - change the minimum acceptance limits for the .8V setting from 48 to 45

- change the minimum acceptance limits for the 1.0V setting from 48 to 45.

15. NEED FOR CHANGE

See Attachment "A"

16. EFFECT ON ASSOCIATED EQUIPMENT

None

17. PRODUCTION EFFECTIVITY BY SERIAL NO.	18. EFFECT ON PRODUCTION DELIVERY SCHEDULE
N/A	N/A
19. RECOMMENDED RETROFIT EFFECTIVITY	**20. ESTIMATED KIT DELIVERY SCHEDULE**
None	N/A

21. ESTIMATED COSTS/SAVINGS

22. SUBMITTING ACTIVITY AUTHORIZING SIGNATURE	TITLE
George Ditton 8-15-77	Project Engineer/Quality

23. APPROVAL/DISAPPROVAL

GOVERNMENT ACTIVITY	SIGNATURE	DATE

DD FORM 1 DEC 68 1693

GPO : 1969 O—332-004

MEMCOR ECP 17
CONTRACT DAAB07-76-C-0135
ATTACHMENT "A"
Sheet 1 of 1

Need For Change (Block 15)

Memcor is unable to consistently obtain a minimum frequency shift of 48kc, with a frequency shift setting of .8V and 1.0V, when testing the A6300A module at 30.000MHz on the Government Gage Test Fixture #323860.

Circuit changes to bring these readings within the present requirements, would cause the 52.910MHz (+) frequency shift requirements of some modules to be out of tolerance, thereby necessitating degradation of the tracking alignment of the module; or, a tolerance change for some of the (+) frequency shift requirements @ 52.910MHz.

Allowing these (2) two limit changes will not affect the overall performance of the module. The module will still meet the minimum sensitivity requirements of 225 to 600kc per volt, as required on prints SM-B-416421 and SM-B-416427.

NOTICE OF REVISION (NOR)
(SEE MIL-STD-480 FOR INSTRUCTIONS)
This revision described below has been authorized for the document listed.

1. ORIGINATOR NAME AND ADDRESS	DATE	MFR. CODE	NOR. NO.
E-SYSTEMS INC., MEMCOR DIVISION 41 EAST PARK DRIVE, HUNTINGTON, IN 46750	8-15-77	83777	106

2. TITLE OF DOCUMENT	3. MFR. CODE	4. DOCUMENT NUMBER	
Test Procedure - Gov. Gage T.F.	80063	SC-A-400368	
	5. REVISION LETTER (CURRENT) A	(NEW) N/A	6. ECP NO. ECP17

7. CONFIGURATION ITEM (OR SYSTEM) TO WHICH ECP APPLIES

Radio Set AN/VRC-12

8. DESCRIPTION OF REVISION

Change the minimum acceptance limits of step 9.3.1 as follows:

Freq. Shift Setting	Acceptance Limits Minimum	Acceptance Limits Maximum
.8	45	130
1.0	45	130

9. THIS SECTION FOR GOVERNMENT USE ONLY

A. CHECK ONE

☐ EXISTING DOCUMENT SUPPLEMENTED BY THIS NOR MAY BE USED IN MANUFACTURE.

☐ REVISED DOCUMENT MUST BE RECEIVED BEFORE MANUFACTURER MAY INCORPORATE THIS CHANGE.

☐ CUSTODIAN OF MASTER DOCUMENT SHALL MAKE ABOVE REVISION AND FURNISH REVISED DOCUMENT TO:

B. ACTIVITY AUTHORIZED TO APPROVE CHANGE FOR GOVERNMENT	SIGNATURE AND TITLE	DATE
10. ACTIVITY ACCOMPLISHING REVISION	REVISION COMPLETED (SIGNATURE)	DATE

DD FORM 1 DEC 66 1695

U.S. GOVERNMENT PRINTING OFFICE : 1969 O - 333-063

GOV'T GAGE

MEMCOR ECP 17
CONTRACT DAAB07-76-C-0135

A6300A

LOT NO.	TEST FREQ	OUTPUT LEVEL MIN(MV)	OUTPUT LEVEL READING	OUTPUT FREQUENCY MIN	OUTPUT FREQUENCY MAX	OUTPUT FREQUENCY READING
	50.00 MHZ	48	79	987	013	004
SAMPLE	40.91 MHZ	60	80	187	213	200
NO	52.91 MHZ	62	76	403	433	420
#2	53.00 MHZ	66	99	987	013	998
	63.91 MHZ	68	91	187	213	200
	75.91 MHZ	70	73	403	433	428

FREQ SHIFT	LIMITS MIN.	LIMITS MAX	TEST FREQUENCY 50.00-	50.00+	40.91-	40.91+	52.91-	5[illegible]
.2	48	130	57	59	72	73	90	93
.4	48	130	55	60	69	77	87	96
.6	48	130	53	63	68	80	85	99
.8	48	130	52	64	65	82	83	104
1.0	48	130	47	68	63	85	80	106
			53.00-	53.00+	63.91-	63.91+	75.91-	7[illegible]
.2	55	130	61	64	74	77	90	92
.4	55	130	61	65	72	79	87	94
.6	55	130	59	68	70	81	85	97
.8	55	130	58	69	69	87	82	101
1.0	55	130	57	71	67	88	83	103

GOV'T GAGE

A6300A

MEMCOR ECP 17
CONTRACT DAAB07-76-C-0135

LOT NO.	TEST FREQ	OUTPUT LEVEL MIN(mV)	OUTPUT LEVEL READING	OUTPUT FREQUENCY MIN	OUTPUT FREQUENCY MAX	OUTPUT FREQUENCY READING
	30.00 MHZ	48	84	987	013	004
SAMPLE	40.91 MHZ	60	84	187	213	200
NO	52.91 MHZ	62	78	403	433	422
#5	53.00 MHZ	66	100	987	013	997
	63.91 MHZ	68	88	187	213	199
	75.91 MHZ	70	67-100	403	433	427

FREQ SHIFT	LIMITS MIN.	LIMITS MAX	TEST FREQUENCY 30.00-	30.00+	40.91-	40.91+	52.91-	52.9
.2	48	130	53	54	65	67	79	81
.4	48	130	51	56	62	69	76	84
.6	48	130	49	58	61	71	74	87
.8	48	130	48	60	59	73	72	90
1.0	48	130	47	62	56	75	69	92
			53.00-	53.00+	63.91-	63.91+	75.91-	75.9
.2	55	130	65	67	78	80	92	96
.4	55	130	64	69	75	82	90	98
.6	55	130	61	70	74	85	87	101
.8	55	130	61	73	72	87	86	103
1.0	55	130	59	75	70	90	82	107

GOV'T GAGE

A6300A

MEMCOR ECP 17
CONTRACT DAAB07-76-C-0135

LOT NO.	TEST FREQ	OUTPUT LEVEL MIN(MV)	OUTPUT LEVEL READING	OUTPUT FREQUENCY MIN	OUTPUT FREQUENCY MAX	OUTPUT FREQUENCY READING
	50.00 MHZ	48	82	987	013	003
SAMPLE	40.91 MHZ	60	82	187	213	200
NO	52.91 MHZ	62	75	403	433	420
#10	53.00 MHZ	66	100	987	013	994
	63.91 MHZ	68	88	187	213	198
	75.91 MHZ	70	67-100	403	433	426

FREQ SHIFT	LIMITS MIN.	LIMITS MAX	TEST FREQUENCY 50.00-	50.00+	40.91-	40.91+	52.91-	5[illegible].9[illegible]
.2	48	130	59	60	77	77	95	98
.4	48	130	56	62	73	81	92	10[illegible]
.6	48	130	55	65	70	83	90	105
.8	48	130	53	68	68	86	86	11[illegible]
1.0	48	130	52	69	66	89	84	115
			53.00-	53.00+	63.91-	63.91+	75.91-	75[illegible]
.2	55	130	63	64	76	78	90	92
.4	55	130	61	66	73	79	88	9[illegible]
.6	55	130	60	68	71	82	85	98
.8	55	130	58	70	70	84	84	10[illegible]
1.0	55	130	57	72	68	84	82	10[illegible]

GOV'T GAGE

A6300A

MEMCOR ECP 17
CONTRACT DAAB07-76-C-0135

LOT NO.	TEST FREQ	OUTPUT LEVEL MIN (MV)	OUTPUT LEVEL READING	OUTPUT FREQUENCY MIN	OUTPUT FREQUENCY MAX	OUTPUT FREQUENCY READING
	50.00 MHZ	48	66	987	013	000
SAMPLE	40.91 MHZ	60	75	187	213	198
NO	52.91 MHZ	62	75	403	433	419
#11	53.00 MHZ	66	100	987	013	996
	63.91 MHZ	68	98	187	213	196
	75.91 MHZ	70	86	403	433	418

FREQ SHIFT	LIMITS MIN.	LIMITS MAX	TEST FREQUENCY 50.00 -	50.00 +	40.91 -	40.91 +	52.91 -	52.9
.2	48	130	63	64	79	81	101	105
.4	48	130	60	67	77	84	98	109
.6	48	130	58	70	74	88	95	113
.8	48	130	57	72	70	91	92	117
1.0	48	130	55	75	70	94	89	121
			53.00 -	53.00 +	63.91 -	63.91 +	75.91 -	75.9
.2	55	130	67	69	84	86	100	103
.4	55	130	65	70	82	88	98	106
.6	55	130	64	73	79	90	95	110
.8	55	130	63	75	77	94	92	112
1.0	55	130	60	77	75	96	91	115

NOTE: Standard Module performance on Pages 11 thru 15 is applicable when using Fixture 323860-I

8.3 TEST COMPLETION

8.3.1 Set TEST switch to OFF.

8.3.2 Remove the Oscillator-Buffer Oscillator board under test from the test fixture set.

CAUTION: HANDLE OSCILLATOR-BUFFER OSCILLATOR BOARDS WITH CARE. CRITICAL PARTS ARE EXPOSED.

8.3.3 Unplug connector P6002 from connector J6002.

9.0 ACCEPTANCE LIMITS AND CONTROL STANDARD PERFORMANCE

9.1 OUTPUT LEVEL.

FREQ SETTING (MC)	ACCEPTANCE LIMITS (MV) MINIMUM	CONTROL STANDARDS OUTPUT LEVEL (MV) NR.1	NR.2
30.000	48	122	128
40.910	60	131	139
52.910	62	123	133
53.000	66	136	147
63.910	68	125	137
75.910	70	116	128

9.2 OUTPUT FREQUENCY

FREQ SETTING (MC)	ACCEPTANCE LIMITS OSCILLATOR-BUFFER FREQUENCY CONTROL MINIMUM	MAXIMUM	CONTROL STANDARDS NR.1	NR.2
30.000	987	013	998	999
40.910	187	213	199	199
52.910	403	433	419	419
53.000	987	013	997	997
63.910	187	213	198	196
75.910	403	433	421	419

9.3 SHIFT SENSITIVITY, 30.000 MC

9.3.1 FREQ SHIFT POLARITY (-) POSITION, 30.000 MC

FREQUENCY SHIFT, INCREASE (KC)

FREQ SHIFT SETTING	ACCEPTANCE LIMITS		CONTROL STANDARDS	
	MINIMUM	MAXIMUM	NR.1	NR.2
0	-	-	-	-
.2	48	130	62	62
.4	48	130	60	60
.6	48	130	59	58
.8	45 ~~48~~	130	56	57
1.0	45 ~~48~~	130	55	55

9.3.2 FREQ SHIFT POLARITY (+) POSITION, 30.000 MC

FREQUENCY SHIFT, DECREASE (KC)

FREQ SHIFT SETTING	ACCEPTANCE LIMITS		CONTROL STANDARDS	
	MINIMUM	MAXIMUM	NR.1	NR.2
0	-	-	-	-
.2	48	130	64	64
.4	48	130	67	66
.6	48	130	68	69
.8	48	130	72	72
1.0	48	130	74	74

9.4 SHIFT SENSITIVITY, 40.910 MC

9.4.1 FREQ SHIFT POLARITY (-) POSITION, 40.910 MC

FREQUENCY SHIFT, INCREASE (KC)

FREQ SHIFT SETTING	ACCEPTANCE LIMITS		CONTROL STANDARDS	
	MINIMUM	MAXIMUM	NR.1	NR.2
0	-	-	-	-
.2	48	130	82	81
.4	48	130	79	79
.6	48	130	77	76
.8	48	130	74	74
1.0	48	130	73	71

9.4.2 FREQ SHIFT POLARITY (+) POSITION, 40.910 MC

FREQUENCY SHIFT, DECREASE (KC)

FREQ SHIFT SETTING	ACCEPTANCE LIMITS MINIMUM	ACCEPTANCE LIMITS MAXIMUM	CONTROL STANDARDS NR.1	CONTROL STANDARDS NR.2
0	-	-	-	-
.2	48	130	84	84
.4	48	130	88	86
.6	48	130	90	89
.8	48	130	94	93
1.0	48	130	97	95

9.5 SHIFT SENSITIVITY, 52.910 MC

9.5.1 FREQ SHIFT POLARITY (-) POSITION, 52.910 MC

FREQUENCY SHIFT, INCREASE (KC)

FREQ SHIFT SETTING	ACCEPTANCE LIMITS MINIMUM	ACCEPTANCE LIMITS MAXIMUM	CONTROL STANDARDS NR.1	CONTROL STANDARDS NR.2
0	-	-	-	-
.2	48	130	108	108
.4	48	130	106	105
.6	48	130	102	102
.8	48	130	99	98
1.0	48	130	97	96

9.5.2 FREQ SHIFT POLARITY (+) POSITION, 52.910 MC

FREQUENCY SHIFT, DECREASE (KC)

FREQ SHIFT SETTING	ACCEPTANCE LIMITS MINIMUM	ACCEPTANCE LIMITS MAXIMUM	CONTROL STANDARDS NR.1	CONTROL STANDARDS NR.2
0	-	-	-	-
.2	48	130	112	112
.4	48	130	116	115
.6	48	130	120	119
.8	48	130	124	123
1.0	48	130	128	127

9.6 SHIFT SENSITIVITY, 53.000 MC.

9.6.1 FREQ SHIFT POLARITY (-) POSITION, 53.000 MC

FREQUENCY SHIFT, INCREASE (KC)

FREQ SHIFT SETTING	ACCEPTANCE LIMITS MINIMUM	ACCEPTANCE LIMITS MAXIMUM	CONTROL STANDARDS NR.1	CONTROL STANDARDS NR.2
0	-	-	-	-
.2	55	130	69	70
.4	55	130	66	68
.6	55	130	66	66
.8	55	130	64	66
1.0	55	130	62	64

9.6.2 FREQUENCY SHIFT POLARITY (+) POSITION, 53.000 MC

FREQUENCY SHIFT, DECREASE (KC)

FREQ SHIFT SETTING	ACCEPTANCE LIMITS MINIMUM	ACCEPTANCE LIMITS MAXIMUM	CONTROL STANDARDS NR.1	CONTROL STANDARDS NR.2
0	-	-	-	-
.2	55	130	70	72
.4	55	130	72	73
.6	55	130	74	75
.8	55	130	76	68
1.0	55	130	77	80

9.7 SHIFT SENSITIVITY, 63.910 MC

9.7.1 FREQ SHIFT POLARITY (-) POSITION, 63.910 MC

FREQUENCY SHIFT, INCREASE (KC)

FREQ SHIFT SETTING	ACCEPTANCE LIMITS MINIMUM	ACCEPTANCE LIMITS MAXIMUM	CONTROL STANDARDS NR.1	CONTROL STANDARDS NR.2
0	-	-	-	-
.2	55	130	87	90
.4	55	130	85	87
.6	55	130	82	85
.8	55	130	81	84
1.0	55	130	79	82

9.7.2 FREQ SHIFT POLARITY (+) POSITION, 63.910 MC

FREQUENCY SHIFT, DECREASE (KC)

FREQ SHIFT SETTING	ACCEPTANCE LIMITS MINIMUM	ACCEPTANCE LIMITS MAXIMUM	CONTROL STANDARDS NR.1	CONTROL STANDARDS NR.2
0	-	-	-	-
.2	55	130	88	91
.4	55	130	91	95
.6	55	130	94	97
.8	55	130	96	99
1.0	55	130	99	102

9.8 SHIFT SENSITIVITY, 75.910 MC

9.8.1 FREQ SHIFT POLARITY (-) POSITION, 75.910 MC

FREQUENCY SHIFT, INCREASE (KC)

FREQ SHIFT SETTING	ACCEPTANCE LIMITS MINIMUM	ACCEPTANCE LIMITS MAXIMUM	CONTROL STANDARDS NR.1	CONTROL STANDARDS NR.2
0	-	-	-	-
.2	55	130	106	110
.4	55	130	104	107
.6	55	130	101	104
.8	55	130	99	102
1.0	55	130	97	100

9.8.2 FREQ SHIFT POLARITY (+) POSITION, 75.910 MC

FREQUENCY SHIFT, DECREASE (KC)

FREQ SHIFT SETTING	ACCEPTANCE LIMITS MINIMUM	ACCEPTANCE LIMITS MAXIMUM	CONTROL STANDARDS NR.1	CONTROL STANDARDS NR.2
0	-	-	-	-
.2	55	130	109	112
.4	55	130	112	116
.6	55	130	116	118
.8	55	130	118	122
1.0	55	130	121	125

APPENDIX F

DISTRIBUTION LIST FOR
TECHNICAL REPORTS

DISTRIBUTION LIST FOR TECHNICAL REPORTS

101 DEFENSE DOCUMENTATION CENTER
ATTN: DDC-TCA
CAMERON STATION (BLDG. 5)
*012 ALEXANDRIA, VA 22314

102 DIRECTOR
NATIONAL SECURITY AGENCY
ATTN: TDL
001 FORT GEORGE G. MEADE, MD 20755

103 CODE R123, TECH LIBRARY
DCA DEFENSE COMM ENGRG CTR
1860 WIEHLE AVE
001 RESTON, VA 22090

104 DEFENSE COMMUNICATIONS AGENCY
TECHNICAL LIBRARY CENTER
CODE 205 (P. A. TOLOVI)
001 WASHINGTON, DC 20305

200 OFFICE OF NAVAL RESEARCH
CODE 427
001 ARLINGTON, VA 22217

203 GIDEP ENGINEERING & SUPPORT DEPT
TE SECTION
PO BOX 398
001 NORCO, CA 91760

205 DIRECTOR
NAVAL RESEARCH LABORATORY
ATTN: CODE 2627
001 WASHINGTON, DC 20375

206 COMMANDER
NAVAL ELECTRONICS LABORATORY CENTER
ATTN: LIBRARY
001 SAN DIEGO, CA 92152

207 CDR. NAVAL SURFACE WEAPONS CENTER
WHITE OAK LABORATORY
ATTN: LIBRARY, CODE WX-21
001 SILVER SPRING, MD 20910

---

* Decrease to 2 copies if report is not releasable to public. See ECOMR 70-31 for types of reports not to be sent to DDC

210 COMMANDANT, MARINE CORPS
HQ. US MARINE CORPS
ATTN: CODE LMC
002 WASHINGTON, DC 20380

211 HQ. US MARINE CORPS
ATTN: CODE INTS
001 WASHINGTON, DC 20380

212 COMMAND, CONTROL & COMMUNICATIONS DIV
DEVELOPMENT CENTER
MARINE CORPS DEVELOPMENT & EDUC COMD
001 QUANTICO, VA 22134

215 NAVAL TELECOMMUNICATIONS COMMAND
TECHNICAL LIBRARY, CODE 91L
4401 MASSACHUSETTS AVENUE, NW
001 WASHINGTON, DC 20390

217 NAVAL AIR SYSTEMS COMMAND
CODE: AIR-5332
004 WASHINGTON, DC 20360

300 AUL/LSE 64-285
001 MAXWELL AFB, AL 36112

301 ROME AIR DEVELOPMENT CENTER
ATTN: DOCUMENTS LIBRARY (TILD)
001 GRIFFISS AFB, NY 13441

304 AIR FORCE GEOPHYSICS LAB
L.G. HANSCOM AFB
ATTN: LIR
001 BEDFORD, MA 01730

307 HQ ESD (DRI)
L. G. HANSCOM AFB
001 BEDFORD, MA 01731

310 HQ. AFCS
ATTN: EPECRW MAIL STOP 105B
001 RICHARDS-GEBAUR AFB, MO 64030

312 HQ. AIR FORCE ELECTRONIC WARFARE CENTER
ATTN: SURP
002 SAN ANTONIO, TX 78243

314 HQ. AIR FORCE SYSTEMS COMMAND
ATTN: DLCA
ANDREWS AFB
001 WASHINGTON, DC 20331

403 CDR. MIRCOM
REDSTONE SCIENTIFIC INFO CENTER
ATTN: DRCP-CFE
001 REDSTONE ARSENAL, AL 35809

406 COMMANDANT
US ARMY AVIATION CENTER
ATTN: ATZQ-D-MA
003 FORT RUCKER, AL 36362

408 COMMANDANT
US ARMY MILITARY POLICE SCHOOL
ATTN: ATSJ-CD-M-C
003 FORT McCLELLAN, AL 36201

417 COMMANDER
US ARMY INTELLIGENCE CENTER & SCHOOL
ATTN: ATSI-CO-MD
002 FORT HUACHUCA, AZ 85613

418 COMMANDER
HQ. FORT HUACHUCA
ATTN: TECHNICAL REFERENCE DIV
001 FORT HUACHUCA, AZ 85613

419 COMMANDER
US ARMY ELECTRONIC PROVING GROUND
ATTN: STEEP-MT
002 FORT HUACHUCA, AZ 85613

420 COMMANDER
USASA TEST & EVALUATION CENTER
ATTN: IAO-CDR-T
001 FORT HUACHUCA, AZ 85613

432 DIR, US ARMY AIR MOBILITY R&D LAB
ATTN: T. GOSSETT, BLDG 207-5
NASA AMES RESEARCH CENTER
001 MOFFETT FIELD, CA 94035

437 DEPUTY FOR SCIENCE & TECHNOLOGY
OFFICE, ASSIST SEC ARMY (R&D)
001 WASHINGTON, DC 20310

438 HQDA (DAMA-APR/DR. F. D. VERDERAME)
001 WASHINGTON, DC 20310

470 DIRECTOR OF COMBAT DEVELOPMENTS
US ARMY ARMOR CENTER
ATTN: ATZK-CD-MS
002 FORT KNOX, KY 40121

473 COMMANDANT
US ARMY ORDNANCE SCHOOL
ATTN: ATSL-CD-OR
002 ABERDEEN PROVING GROUND, MD 21005

475 CDR. HARRY DIAMOND LABORATORIES
ATTN: LIBRARY
2800 POWDER MILL ROAD
001 ADELPHI, MD 20783

477 DIRECTOR
US ARMY BALLISTIC RESEARCH LABS
ATTN: DRXBR-LB
001 ABERDEEN PROVING GROUND, MD 21005

478 DIRECTOR
US ARMY BALLISTIC RESEARCH LABS
ATTN: DRXBR-CA (DR. L. VANDEKIEFT)
001 ABERDEEN PROVING GROUND, MD 21005

479 DIRECTOR
US ARMY HUMAN ENGINEERING LABS
001 ABERDEEN PROVING GROUND, MD 21005

482 DIRECTOR
US ARMY MATERIEL SYSTEMS ANALYSIS ACTY
ATTN: DRXSY-T
001 ABERDEEN PROVING GROUND, MD 21005

507 CDR. AVRADCOM
ATTN: DRSAV-G
PO BOX 209
001 ST. LOUIS, MD 63166

512 COMMANDER
PICATINNY ARSENAL
ATTN: SARPA-ND-A-4 (BLDG 95)
001 DOVER, NY 07801

514 DIRECTOR
JOINT COMM OFFICE (TRI-TAC)
ATTN: TT-AD (TECH DOCU CEN)
001 FORT MONMOUTH, NJ 07703

515 PROJECT MANAGER, REMBASS
ATTN: DRCPM-RBS
002 FORT MONMOUTH, NJ 07703

516 PROJECT MANAGER, NAVCON
ATTN: DRCPM-NC-TM
BLDG 2539
001 FORT MONMOUTH, NJ 07703

517 COMMANDER
US ARMY SATELLITE COMMUNICATIONS AGCY
ATTN: DRCPM-SC-3
002 FORT MONMOUTH, NJ 07703

518 TRI-TAC OFFICE
ATTN: TT-SE (DR. PRITCHARD)
001 FORT MONMOUTH, NJ 07703

519 CDR. USA AVIONICS LAB
AVRADCOM
ATTN: DAVAA-D
001 FORT MONMOUTH, NJ 07703

531 CDR. US ARMY RESEARCH OFFICE
ATTN: DRXRO-IP
PO BOX 12211
001 RESEARCH TRIANGLE PARK, NC 27709

533 COMMANDANT
US ARMY INST FOR MILITARY ASSISTANCE
ATTN: ATSU-CTD-MO
001 FORT BRAGG, NC 28307

536 COMMANDER
US ARMY ARCTIC TEST CENTER
ATTN: STEAC-TD-MI
002 APO SEATTLE, WA 98733

537 CDR. US ARMY TROPIC TEST CENTER
ATTN: STETC-MO-A (TECH LIBRARY)
DRAWER 942
001 FORT CLAYTON, CANAL ZONE 09827

542 COMMANDANT
US ARMY FIELD ARTILLERY SCHOOL
ATTN: ATSFA-CTD
002 FORT SILL, OK 73503

554 COMMANDANT
US ARMY AIR DEFENSE SCHOOL
ATTN: ATSA-CD-MC
001 FORT BLISS, TX 79916

555 COMMANDER
US ARMY NUCLEAR AGENCY
001 FORT BLISS, TX 79916

563 COMMANDER, DARCOM
ATTN: DRCDE
5001 EISENHOWER AVE
001 ALEXANDRIA, VA 22333

564 CDR. US ARMY SIGNALS WARFARE LAB
ATTN: DELSW-OS
ARLINGTON HALL STATION
001 ARLINGTON, VA 22212

566 CDR. US ARMY SIGNALS WARFARE LAB
ATTN: DELSW-AQ
ARLINGTON HALL STATION
001 ARLINGTON, VA 22212

572 COMMANDER
US ARMY LOGISTICS CENTER
ATTN: ATCL-MC
002 FORT LEE, VA 22801

575 COMMANDER
US ARMY TRAINING & DOCTRINE COMMAND
ATTN: ATCD-TEC
001 FORT MONROE, VA 23651

577 COMMANDER
US ARMY TRAINING & DOCTRINE COMMAND
ATTN: ATCD-TM
001 FORT MONROE, VA 23651

578 CDR. US ARMY GARRISON
VINT HILL FARMS STATION
ATTN: IAVAAF
001 WARRENTON, VA 22186

602 DIRECTOR, NIGHT VISION LABORATORY
US ARMY ELECTRONICS COMMAND
ATTN: DRSEL-NV-D
001 FORT BELVOIR, VA 22060

603 CDR/DIR. ATMOSPHERIC SCIENCES LABORATORY
US ARMY ELECTRONICS COMMAND
ATTN: DRSEL-BL-SY-S
001 WHITE SANDS MISSILE RANGE, NM 88002

605 CHIEF, AVIATION ELECTRONICS DIV (SIMO)
US ARMY ELECTRONICS COMMAND
ATTN: DRSEL-SI-AE, PO BOX 209
001 ST. LOUIS, MO 63166

606 CHIEF
INTEL MATERIEL DEV & SUPPORT OFC
ELECTRONIC WARFARE LAB. ECOM
001 FORT MEADE, MD 20755

701 MIT - LINCOLN LABORATORY
ATTN: LIBRARY (RM A-082)
PO BOX 73
002 LEXINGTON, MA 02173

703 NASA SCIENTIFIC & TECH INFO FACILITY
BALTIMORE/WASHINGTON INTL AIRPORT
001 PO BOX 8757, MD 21240

AD-A056 084　E-SYSTEMS INC HUNTINGTON IN MEMCOR DIV　F/G 17/2.1

AN/VRC-12, 43-49 SERIES RADIO SET SILICONIZATION PRODUCT IMPROV--ETC(U)

MAY 78　K P YELTON　DAAB07-76-C-0135

UNCLASSIFIED　CORADCOM-76-C-0135-F　NL

5 OF 5
ADA
056084

END
DATE
FILMED
8-78
DDC

705 ADVISORY GROUP ON ELECTRON DEVICES
201 VARICK STREET, 9TH FLOOR
002 NEW YORK, NY 10014

706 ADVISORY GROUP ON ELECTRON DEVICES
ATTN: SECY. WORKING GROUP D (LASERS)
201 VARICK STREET
002 NEW YORK, NY 10014

707 TACTEC
BATTELLE MEMORIAL INSTITUTE
505 KING AVENUE
001 COLUMBUS, OH 43201

710 KETRON, INC.
ATTN: MR. FREDERICK LEUPPERT
1400 WILSON BLVD., ARCHITECT BLDG.
002 ARLINGTON, VA 22209

712 R. C. HANSEN, INC.
PO BOX 215
001 TARZANA, CA 91356

680 COMMANDER
US ARMY ERADCOM
000 FORT MONMOUTH, NJ 07703

1 DELEW-D
1 DELET-D
3 DELCS-D
1 DELAS-D
1 DELSD-L

680 COMMANDER
US ARMY CORADCOM
000 FORT MONMOUTH, NJ 07703

2 DRDCO-PP-A-SA
3 DRDCO-COM-RN
1 DRDCO-COM-D-4
15 DRDCO-COM-RN-1
1 DRCPM-AA
1 DRCPM-TDS-SE
1 USMC-LNO

DISTRIBUTION LIST FOR TECHNICAL REPORTS - Continued

680 COMMANDER
US ARMY CERCOM
000 FT MONMOUTH, NJ 07703

1 DRSEL-PL-S
1 DRSEL-PP-I-PI
1 DRSEL-LE
1 DRSEL-MA-MP
2 DRSEL-MS-TI
1 DRSEL-LE-CR
1 DRSEL-GS-H
1 TRADOC-LNO